Forest Management Agreements

Five-Year Review
1984-1989

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Ontario

Ministry of
Natural
Resources

ERRATA:
1989 FMA FIVE-YEAR REVIEWS

CORRECTION TO PAGE 60

Table 2
Working Group - Spruce; Actual Harvest should read 5830, was 583

CORRECTION TO PAGE 100

Table 1
Total Payments should read $10,132,141, was 10,097,091

CORRECTION TO PAGE 105

Table 2
Working Group - Spruce X, 1, 2; Harvest Cut should read 11,085, was 110985

Forest Management Agreements

Five-Year Review
1984-1989

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1984-1989

INTRODUCTION

Forest Management Agreements (FMAs) came into being in Ontario through an amendment to the Crown Timber Act in 1979. The Act as amended provided that the Minister of Natural Resources, subject to the approval of the Lieutenant-Governor-in-Council, could enter into Forest Management Agreements with private sector companies.

The FMAs, which cover a specific section of Crown land, replace existing licensing arrangements with an agreement which requires the companies to manage the forests in the FMA area on a sustained-yield basis. In addition to harvesting, the FMA holder is responsible for all planning, regeneration and other silvicultural activities necessary for proper forest management, including the construction of access roads.

The Ministry of Natural Resources provides certain funding, and must approve the required management documents submitted by the companies. The Agreements are for twenty years, but Section 15 provides that every five years, the Minister must evaluate how the company has carried out its obligations under the Agreement and the associated management documents. If satisfactory, the FMA is renewed for another five years. This is called an "evergreen" arrangement.

In 1985, the Minister released the first five-year review of the first five FMAs in the province. A report on the relationship between harvest and growth, including regeneration, of timber for the five FMA areas was tabled in the Ontario Legislature, as required by legislation. All five FMAs were renewed for another five-year term.

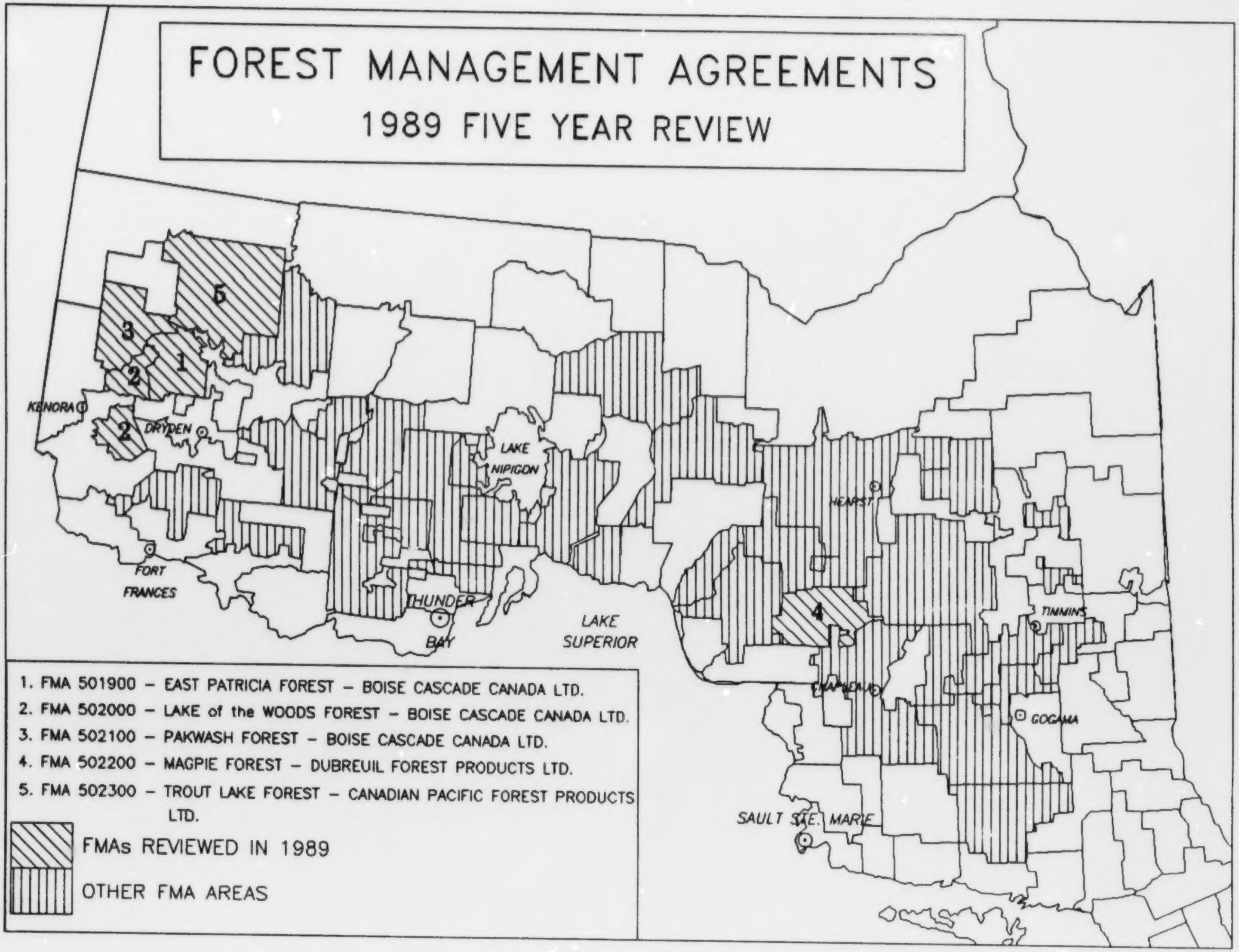
In 1986, the Minister released the second five-year review. A report on the relationship between harvest and growth, including regeneration, was tabled in the Ontario Legislature, as required by legislation. The Abitibi-Price Inc. Spruce River Forest FMA and the Domtar Forest Products Lake Nipigon Forest FMA were extended for another five-year term. The Great West Timber Black River Forest FMA was initially not extended but has since been extended for another five-year term.

In 1988, the Minister released the third five-year review. A report on the relationship between harvest and growth, including regeneration, for the five FMAs was tabled in the Ontario Legislature, as required by legislation. All five were recommended for extension for another five-year term.

In 1990, the Minister released the fourth five-year review. Again, all four FMAs were recommended for extension for an additional term of five years.

As of January 1990, there were 28 FMAs in the province, covering a total of 180,961 square kilometres. This is 69 percent of the 261,991 square kilometres of licensed forest in the province. The location of these Agreements is shown on the following page.

FOREST MANAGEMENT AGREEMENTS
1989 FIVE YEAR REVIEW


5
3
1
2
KENORA
2
DRYDEN
LAKE NIPIGON
HEARST
FORT FRANCES
THUNDER BAY
LAKE SUPERIOR
4
TIMMINS
CHAPLEAU
GOGAMA
SAULT STE. MARIE
1. FMA 501900 – EAST PATRICIA FOREST – BOISE CASCADE CANADA LTD.
2. FMA 502000 – LAKE of the WOODS FOREST – BOISE CASCADE CANADA LTD.
3. FMA 502100 – PAKWASH FOREST – BOISE CASCADE CANADA LTD.
4. FMA 502200 – MAGPIE FOREST – DUBREUIL FOREST PRODUCTS LTD.
5. FMA 502300 – TROUT LAKE FOREST – CANADIAN PACIFIC FOREST PRODUCTS LTD.
FMAs REVIEWED IN 1989
OTHER FMA AREAS

In 1989, the five-year reviews on five more FMAs were conducted and are the subject of this report. The Agreements are:

1. Boise Cascade Canada Ltd., East Patricia Forest - FMA 501900
2. Boise Cascade Canada Ltd., Lake of the Woods Forest - FMA 502000
3. Boise Cascade Canada Ltd., Pakwash Forest - FMA 502100
4. Dubreuil Brothers Ltd., Magpie Forest - FMA 502200
5. Canadian Pacific Forest Products Ltd., Trout Lake Forest - FMA 502300

This report summarizes the various forest operations carried out by the five companies and presents the recommendations of the committee which conducted the reviews. The role of the review committee was to assess the commitment of the companies to their obligations as identified in the Agreements.

The obligations of the company are:

1. to produce and adhere to long and short-term plans at specified times that outline the harvest, access, forest renewal and forest maintenance activities which are to take place.
2. to ensure that the forests under agreement are harvested and regenerated to produce successive crops of timber on a sustained yield basis.
3. to abide by the "ground rules": a series of administrative procedures and technical prescriptions which indicate how treatment, renewal and maintenance activities will take place.
4. to harvest within 10 percent of its timber requirements, as identified in the timber management plan.
5. to declare timber surplus to its requirements and make it available to other users.
6. to treat harvested lands as well as "not satisfactorily regenerated" lands in accordance with the ground rules and to the established standards.
7. to assess the level of regeneration on cutover lands and, where regeneration is unacceptable after a prescribed period of time (usually five years), these areas must be reforested at company expense.

The review committee was comprised of six members engaged by the Ministry of Natural Resources for the purpose of conducting the five reviews. The committee reviewed written records and conducted field inspections to assess company performance and commitment to their FMA obligations.

The Agreements have a requirement for the companies to treat Not Satisfactorily Regenerated (NSR) lands which existed at the signing of the FMA. In all instances, the obligations were substantially exceeded (Table 1).

TABLE 1

Not Satisfactorily Regenerated (NSR) obligations and treatment for five FMA areas for 1983-88.

Company and Forest Name	NSR Obligation to Date	NSR Treated to Date
	(Hectares)	
Boise Cascade Canada Ltd. East Patricia Forest FMA 501900	435	1057
Boise Cascade Canada Ltd. Lake of the Woods Forest FMA 502000	1726	2682
Boise Cascade Canada Ltd. Pakwash Forest FMA 502100	57	2782
Dubreuil Forest Products Ltd. Magpie Forest FMA 502200	542	1439
Canadian Pacific Forest Products Ltd. Trout Lake Forest FMA 502300	319	901

The committee also reviewed company concerns about the FMA arrangements and made a number of recommendations to address issues specific to each FMA.

In all five cases, the review committee recommended that the Agreements be extended for another five-year term.

FIVE-YEAR REVIEW
BOISE CASCADE CANADA LIMITED

EAST PATRICIA FOREST
AGREEMENT 501900
1984-1989

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1. INTRODUCTION

1.1 PURPOSE OF THE REVIEW

The Ministry of Natural Resources and Boise Cascade Canada Limited signed a Forest Management Agreement (FMA) for the **EAST PATRICIA FOREST**, located south of Ear Falls, on April 2, 1984. The purpose of this agreement was to provide for a continuous supply of forest products to the Company's mills at Kenora, Keewatin and Fort Frances, Ontario and to ensure that the forests of the **EAST PATRICIA FOREST** are harvested and regenerated to produce successive crops of timber on a sustained yield basis.

This review of the first five consecutive years of the agreement was conducted on the **EAST PATRICIA FOREST** to determine whether the obligations of the Company under the agreement have been satisfactorily performed and to recommend to the Minister of Natural Resources whether the remaining period of the agreement should be extended for a further term of five years.

1.2 THE REVIEW COMMITTEE

The review was carried out by a committee of three, engaged by the Ministry of Natural Resources for this purpose. The committee members were:

- Mr. R. A. Baxter, Director of Operations,
  Northern Ontario, Ministry of Natural Resources
  (Retired), Committee Chairman,

- Dr. H. G. Cumming, Professor,
  Fish and Wildlife Management, School of Forestry,
  Lakehead University, and

- Mr. R. Clarke, Associate Professor,
  Silviculture and Management Planning,
  School of Forestry, Lakehead University.

1.3 TASKS OF THE REVIEW COMMITTEE

The review committee's assignment was to undertake a fair and objective review of Boise Cascade Canada Limited's performance on the **EAST PATRICIA FOREST** during its first five-year term vis-a-vis its obligations under Forest Management Agreement 501900 and to make recommendations to the Minister of Natural Resources on the extension of the agreement's term according to the "Evergreen" section of the agreement (i.e. Section 15, paragraph 33).

The review was conducted by:

- examining the management, operating and annual plans, and the annual reports prepared by the Company with regard to their submission dates and their acceptability to the Ministry,
- inspecting the depletion, silvicultural and access road records for adequacy and for conformity with the management plans and the ground rules of the agreement,
- comparing the levels of harvest and treatment of not satisfactorily regenerated (NSR) lands outlined in the annual reports with the levels required by provisions of the agreement,
- selecting and field inspecting harvest cuts, silvicultural projects, and road construction typical of the techniques employed on the forest for conformity with the agreement holder's records and for field application of the ground rules,
- determining the degree to which other forest users and other forest values are accommodated in management planning and in field operations, and
- meeting with Company and Ministry district staff to identify problem areas and agreement concerns on the part of either party.

The **LAKE OF THE WOODS** and **EAST PATRICIA FORESTS**, FMAs 502000 and 501900, have been amalgamated commencing April 1st, 1989 into the **PATRICIA FOREST**. Data for the **LAKE OF THE WOODS** and **EAST PATRICIA FORESTS** for the next five-year term refer to the **PATRICIA FOREST**, FMA 502000.

2. PROCEDURES AND FINDINGS

2.1 MANAGEMENT PLANNING

2.1.1 THE PREPARATION OF PLANS

Paragraphs 6(1), 10(1), 11(1), and 15(1) of the agreement require the Company to prepare management and operating plans and a series of annual plans. These plans must be prepared and submitted according to the timeframes specified in the agreement and according to the manual that has been approved by the Minister for this purpose.

The Forest Management Agreement was signed on April 2, 1984 and the management plan was due twelve months later. Extensions to this date were granted by the Ministry until after the five-year operating plan was approved. The plan was submitted January 28, 1987 and approved March 16, 1987.

The operating plan for the 1984 to 1989 period was due October 1, 1984. An extension was granted to January 1, 1985, and the plan was submitted January 2, 1985. It was returned to the Company for alterations and resubmitted June 14, 1985. The plan was returned to the Company for further alterations and was resubmitted February 24, 1986 and approved July 2, 1986.

The extended period for submitting the operating plan was partially due to the time required to resolve a difference of interpretation as to who was responsible for the preparation of the Modified Management Areas (MMAs), the Company or Ministry, and to reach agreement with the Ministry as to the volume estimates in the plan. It was also due in part to the workload placed on the forestry staff of the Company to prepare three operating plus three annual plans in the same period of time (i.e. for the **EAST PATRICIA, LAKE OF THE WOODS**, and **PAKWASH** FMAs).

The annual plan for the first year of the agreement (1984-1985) was prepared under licence 326700. The annual plans or work schedules were submitted by the due dates. However, they were all returned to the Company for alterations.

The Company had prepared a Timber Management plan for the second five-year term for the Patricia Agreement in accordance with the Timber Management Planning Manual for Crown Lands in Ontario. The new plan was submitted on the due date of October 1, 1988. The plan was returned to the Company for alterations, resubmitted on February 24, 1989, and received approval by the Ministry on March 1, 1989.

In conclusion, although extensions were granted by the Ministry for the submission of the twenty-year management plan and the five-year operating plan, and all plans were returned for alterations, the Company met its management planning obligations.

2.1.2 PLAN IMPLEMENTATION

The agreement requires that the Company conduct its operations in accordance with the approved management, operating and annual plans. The accomplishments of the Company in silvicultural operations and road construction are summarized in Table 1.

The review committee examined the harvest cut and road construction records of the Company and found them to be generally in conformity with the areas allocated for harvest and the road locations specified in the management documents. Four major and two minor deviations from the approved cutting areas were recorded.

Amendments to the plans were requested and approved both in harvest allocation and road location. The level of regeneration, road construction, tending and harvest were lower than planned while site preparation was above planned as portrayed in Figure 1.

Reasons for the low level of harvest are provided in Section 2.3 and for the low level of road construction in Section 2.5 of this report. Regeneration levels did not meet the planned objective due in part to the low level of harvesting, which resulted in fewer hectares available for treatment.

TABLE 1

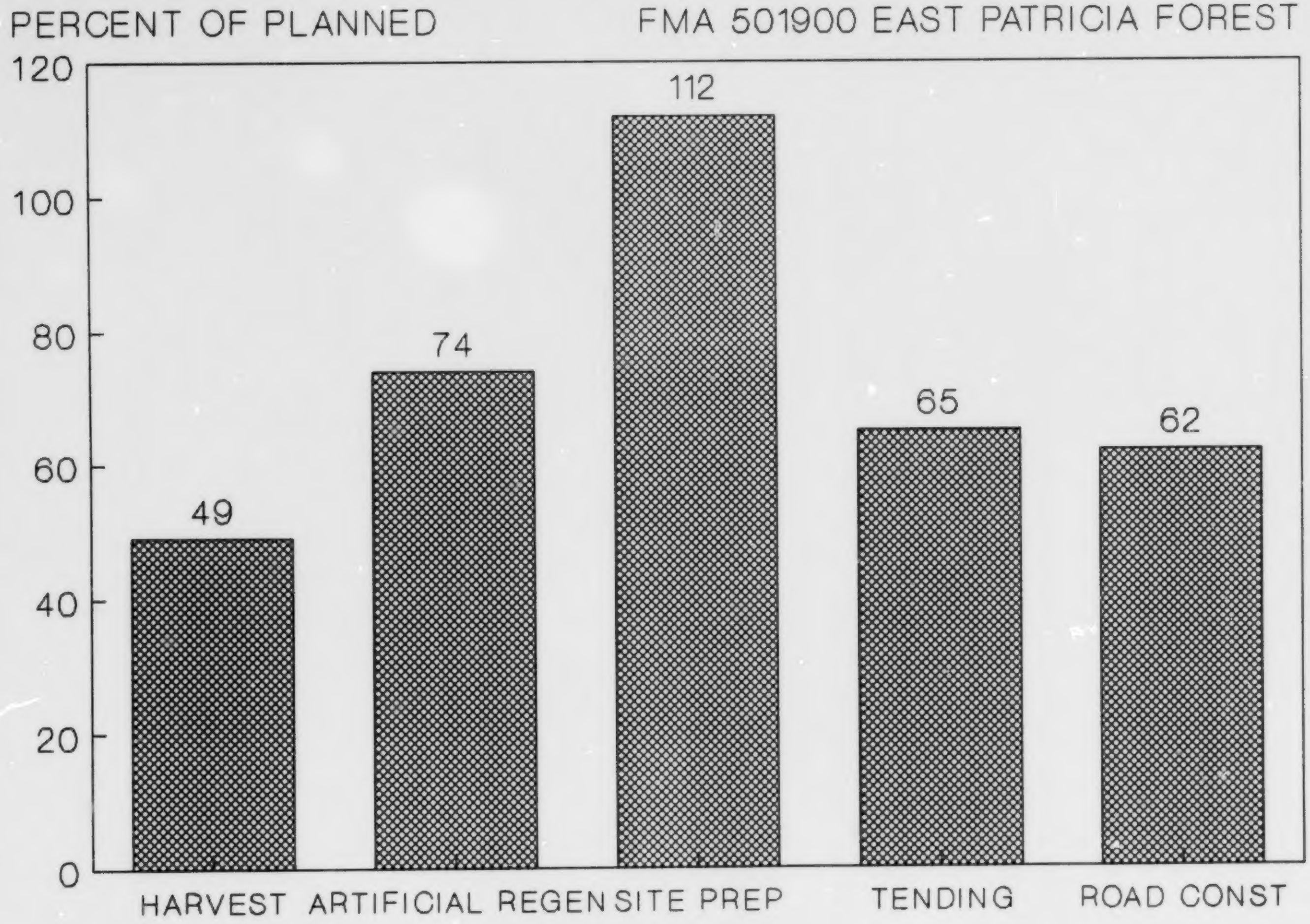
Summary of the Company's forest operations at Ministry expense for 1984-1989.

FMA EXPENDITURE AND ACCOMPLISHMENT REPORT FOR THE FIVE-YEAR TERM 1984-1989	**FMA 501900 EAST PATRICIA FOREST BOISE CASCADE CANADA LTD.**

ACTIVITY	HECTARES	DOLLARS
HARVEST CUT	6,833	
NATURAL REGENERATION	--	
ARTIFICIAL REGENERATION		
PLANTING BAREROOT	769	
PLANTING CONTAINER	979	
SEEDING DIRECT	1,709	
SEEDING WITH CERKON	107	
TOTAL ARTIFICIAL	3,564	
TOTAL REGENERATION	3,564	
TENDING		
CHEMICAL CLEANING/AERIAL	1,327	
CHEMICAL CLEANING/GROUND	--	
OTHER TENDING	--	
TOTAL TENDING	1,327	
SITE PREPARATION		
MECHANICAL	4,077	
CHEMICAL	218	
PRESCRIBED BURN	--	
TOTAL SITE PREPARATION	4,295	
MNR SILVICULTURAL PAYMENTS		$ 1,671,359
ROAD CONSTRUCTION	**KILOMETRES**	**DOLLARS**
PRIMARY	109.7	$ 3,150,100
SECONDARY	44.8	676,500
TOTAL CONSTRUCTION	154.5	$ 3,826,600
ROAD MAINTENANCE	307.7	$ 146,500
MNR TOTAL ROAD PAYMENTS		$ 3,973,100
TOTAL PAYMENTS		$ 5,644,459

Note: This table represents activities carried out by the Company, and the associated costs to MNR. As part of the MNR obligation under the Agreement, Forest Management Activities were also conducted by MNR, at additional expense.

FIGURE 1: COMPARISON OF OPERATING PLAN VS ACTUAL



2.2 THE GROUND RULES

2.2.1 KNOWLEDGE AND FAMILIARITY WITH THE GROUND RULES AND THE AGREEMENT

Based on discussions held with the Company, both in the office and field, it was apparent to the review committee that the Company staff were knowledgeable and familiar with the provisions of the ground rules and the agreement.

2.2.2 CONFORMITY OF HARVEST AND SILVICULTURAL OPERATIONS WITH THE GROUND RULES

The committee's examinations of silvicultural records, its field inspections and its discussions with the designated Crown representative (DCR) all confirmed that harvesting and silvicultural operations have been conducted in accordance with the ground rules.

The ground rules permit the classification of non-treatable sites by mutual agreement. Any area may be classed as non-treatable where extremes in topography, shallowness of soil, excessive rock, poor drainage or inaccessibility make it uneconomical or impractical to treat. Non-treatable areas either allocated for harvesting in the operating plan or depleted for other reasons during the operating plan period were to be included in the depletion section of the annual report. To date, no areas have been declared as non-treatable on the **EAST PATRICIA FOREST**, despite the fact that 6,833 hectares (ha) have been harvested.

The review committee is concerned that non-treatable areas may have been overlooked by both parties and that a failure to classify them will result in disputed retreatment obligations.

RECOMMENDATION: That the Company and the Ministry jointly review the treatable status of lands cut over during this five-year term for which Table 1 of the ground rules specifies treatment but which have received no treatment or plans for treatment, and that the Company report any areas mutually agreed to be non-treatable in the 1990-1991 annual report.

Paragraph 14(3) of the agreement allows for the ground rules to be amended by mutual agreement provided that the amendments are consistent with the management plan and operating plan. The committee noted that in the annual work plans, the Company stated that the number of trees planted per hectare may be less than those stated in Table 1 of the ground rules. However, they did not request an amendment to the ground rules.

RECOMMENDATION: That the Company request an amendment to the ground rules when they are unable to meet the requirement of Table 1 of the ground rules.

2.2.3 CONFORMITY OF INVOICING PRACTICES WITH THE GROUND RULES

The invoicing procedures of the Company were found to be in conformity with those specified in the ground rules. The Company and Ministry representatives reconciled any differences in hectares treated, number of trees planted or kilometres of road constructed or maintained, before submission of invoices.

2.2.4 THE PREPARATION OF NEW GROUND RULES

The Forest Management Agreement with the Company requires both parties to commence the preparation of new ground rules for the next five-year term at least eight months prior to the expiry of the old ground rules, and to agree upon those new ground rules on or before the expiry date of March 31, 1989. The committee notes that the preparation of the new ground rules commenced prior to the required date but at the time of the five-year review, August 21, 1989, the ground rules had not been agreed to by the Company and MNR District.

RECOMMENDATION: That the Company and Ministry officials take immediate action to resolve differences in negotiations for new ground rules.[1]

2.3 HARVEST LEVELS, ALLOWABLE DEPLETION, YIELDS AND WOOD FLOW

According to paragraph 20(1) of the agreement, the Company has agreed to maintain its harvest on the **EAST PATRICIA FOREST** at a level between 90% and 110% of the calculated allowable depletion (allowable cut) for each working group. The Company may request the Minister to authorize variations to those levels specified in the agreement.

Paragraphs 20(3) and 20(4) of the agreement provide for either a remedy or liquidated damages in the event of an overcut or undercut, respectively, on the area under agreement. The agreement holder may avoid liquidated damages through the declaration of timber surplus to its needs in an approved management plan, however, liquidated damages do not apply in the first five-year term of a Forest Management Agreement.

Table 2 provides information in hectares by working group, the maximum allowable depletion (MAD), forecasted harvest, actual harvest and the percentage deficit between actual and forecasted harvest.

The Company declared surpluses in the balsam and poplar working groups of 5,350 and 4,925 hectares respectively (Figure 2). Even with these declared surplus the Company was unable to meet its forecasted harvest commitment by area in any of the working groups. In the category of Other Depletions 6,733 hectares is identified as blowdown. To date, of the original 12,972 hectares identified as blowdown, 6,239 hectares has been salvaged by the Company.

Table 3 provides information regarding the forecasted volume and actual volumes in cubic metres by individual species.

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[1] Ground rules have subsequently been agreed to.

TABLE 2:

EAST PATRICIA FOREST FMA 501900

Comparison in hectares of the maximum allowable depletion, forecasted harvest from the operating plan and actual harvest levels by working group for the period 1984-1989 and the percentage difference between the forecasted harvest and actual harvest.

WORKING GROUP	MAD	FORECASTED HARVEST	ACTUAL HARVEST	PERCENT ACTUAL VS FORECAST
PINE	3015	3015	1552	51
SPRUCE	7640	7640	4072	53
BALSAM	6960	1610	93	06
POPLAR	6700	1775	1013	57
BIRCH			103	
TOTAL	24315	14040	6833	49

TABLE 3:

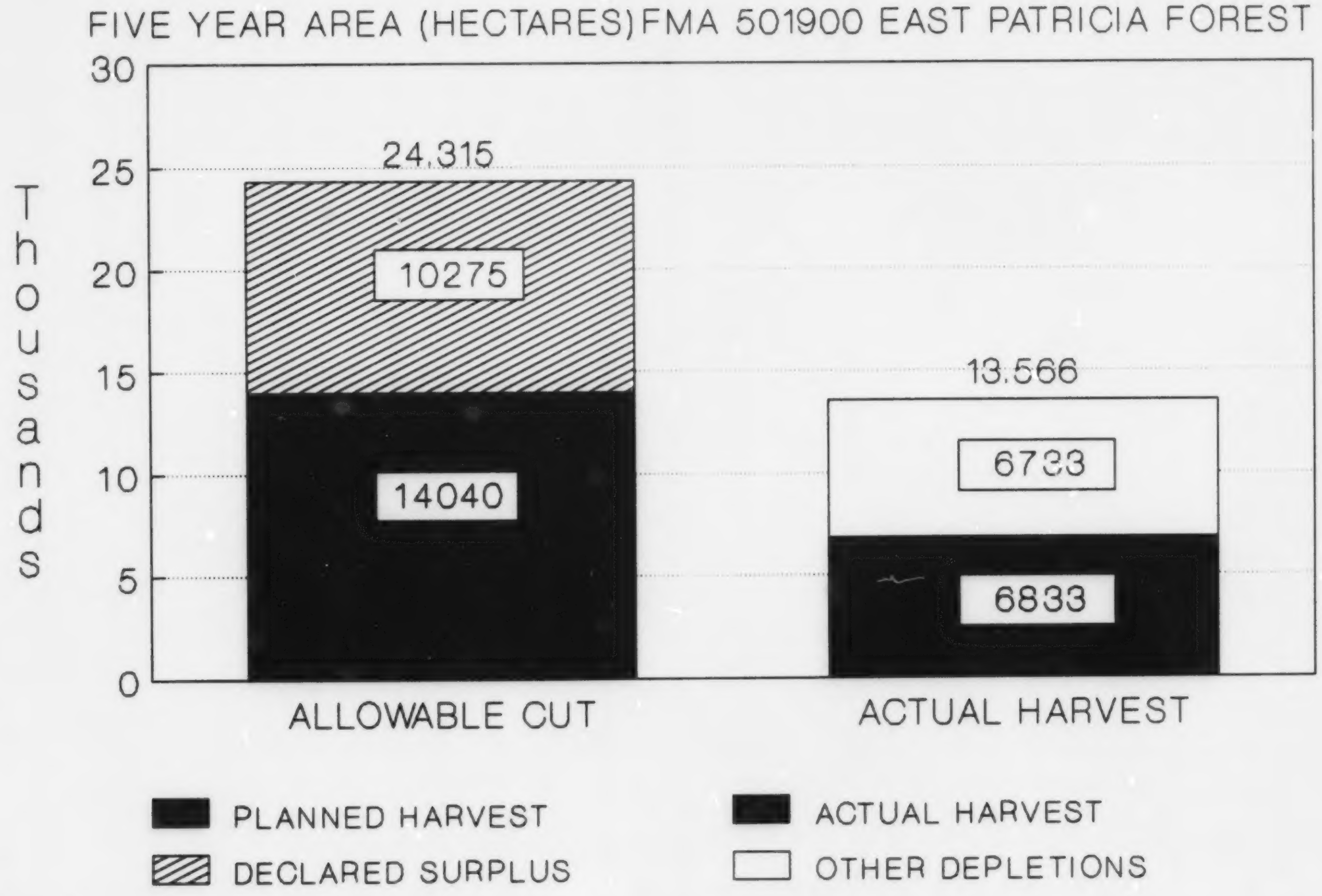
EAST PATRICIA FOREST FMA 501900

Comparison of forecasted and actual volumes in cubic metres (m^3) by species and the percentage difference.

SPECIES	FORECASTED M^3	ACTUAL M^3	PERCENT ACTUAL VS FORECAST
PINE	403570	268411	67
SPRUCE	473140	*428468	81
BALSAM	55430		
POPLAR	187110	7647	04

NOTE: * Spruce and Balsam Combined.

FIGURE 2: COMPARISON OF ALLOWABLE DEPLETION AND HARVEST



The deficit by volume is 33 and 19 percent for the pine and spruce/balsam respectively. The Company harvested near the forecasted volumes for spruce and balsam although the split between the two species is not known.

The Company indicated in the Operating Plan that neither the Company nor the Ministry kept depletion records prior to 1984, making it difficult to predict yields for the period 1984-1989. The predicted yields for 1984-1989 were obtained from the operational cruise (OPC) and the forest resources inventory (FRI). If the actual yields for 1979-1984 were available this information should have been utilized by the Company during the preparation of the Operating Plan. It would have provided better yield estimates than would the OPC/FRI.

This underestimate of yield provided an overestimate in the area required to produce the forecasted yield requirements from this FMA. Close attention should be made in recording yields of species by working group as well as recognizing the influence that depletions other than harvest, such as MMAs, by-pass and roads have on the future MAD.

The Company utilizes a small proportion of balsam and very little poplar. The Company, through the timber management planning process will identify the utilization of the available wood supply.

RECOMMENDATION: That the Company improve its records so that the forecasted harvest by area and resulting yields may be more accurately determined.

RECOMMENDATION: That in the event the Company should forecast harvest levels below 90 percent of those in the current plan, the Company should declare surplus, enter into third party agreements or request an undercut variation from the Minister.

2.4 NSR OBLIGATIONS

The Company was obligated to treat 435 hectares of NSR 2 and 3 Land (Figure 3). The Company during the first five years has site prepared 423 hectares, regenerated 263 hectares and tended 794 hectares of NSR land.

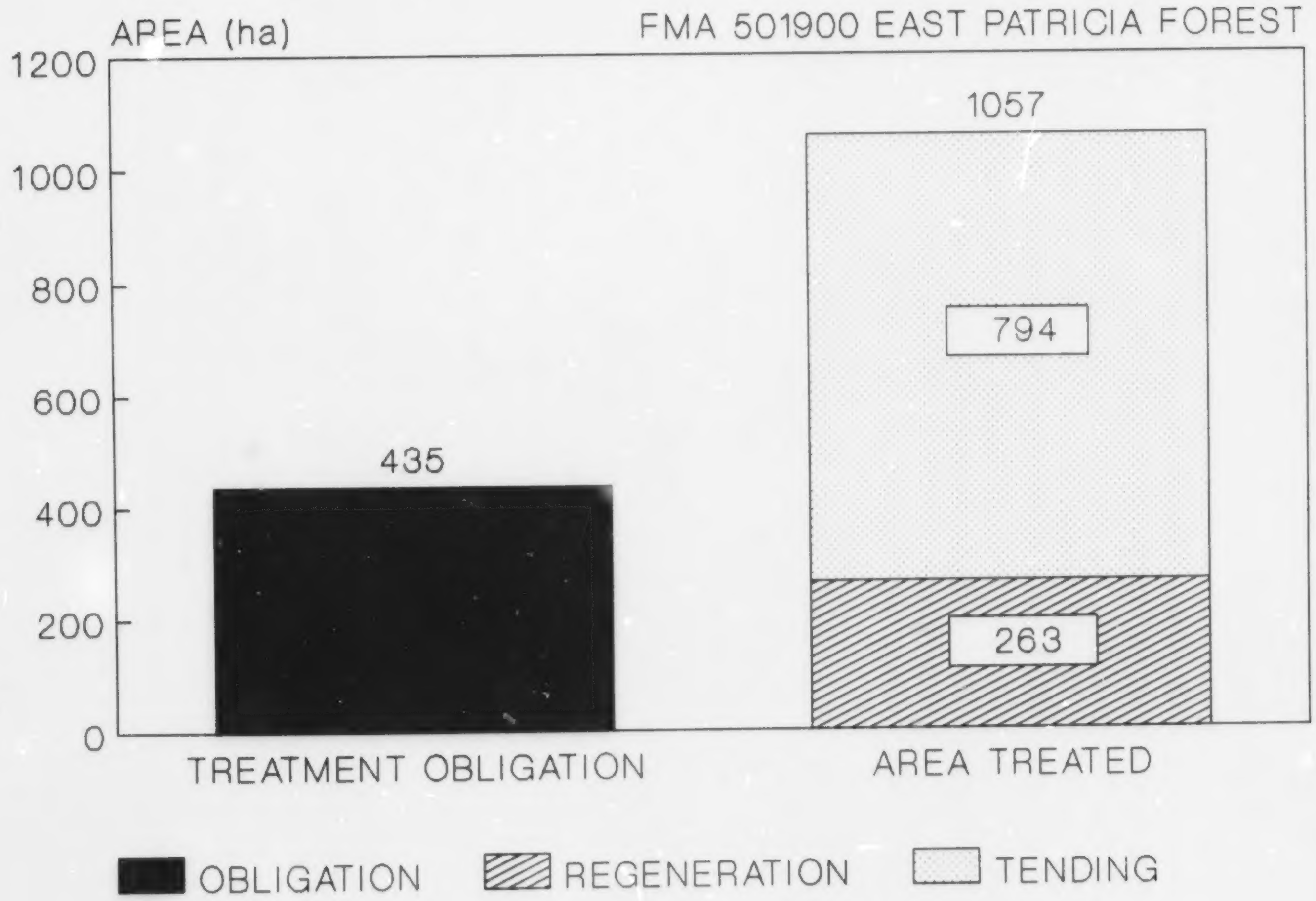
The Company did not record the class of NSR treated in their silvicultural records nor does the Ministry's Annual Report Forms require differentiation. Further, more recently required Ministry forms do not differentiate between NSR and barren and scattered (B&S).

It is the audit team's opinion that the Company has surpassed its obligations in the NSR classed lands.

RECOMMENDATION: That the Company indicate in their silvicultural records the class of NSR which was treated.

RECOMMENDATION: That the Ministry's required reporting forms remain the same during the five-year planning period.

FIGURE 3: COMPARISON OF NSR TREATMENT OBLIGATIONS AND NSR TREATMENT 1984-89



RECOMMENDATION: That the Ministry recognize that the Company has met its obligation in the treatment of NSR land for the five-year period.

2.5 ROAD CONSTRUCTION AND MAINTENANCE

Paragraph 31 of the agreement provides for the Minister to reimburse the Company, subject to a maximum amount per kilometre, for the construction, reconstruction, and maintenance of forest access roads on the agreement area. To be eligible for payment, roads must be included in approved annual plans and constructed according to the standards specified in Schedule "E" of the agreement.

On the **EAST PATRICIA FOREST** an extensive network of roads existed prior to the signing of the FMA. Major access had been provided by Highways 17, 105, and 804 totalling about 217 km. In addition to these roads, the Company had built some 81 km of all weather roads, and a substantial network of tertiary roads that cannot now be measured because, for some of them, the need was temporary and they were not subsequently maintained.

With this extensive road network in place, most of the road building during the first five years of the FMA aimed at upgrading these older roads to FMA standards and accessing some old stands in parts of the agreement area where roads had not yet been built. One hundred twenty-eight percent of the planned primary roads were built, but only 28% of the secondary roads were completed. These differences were due partially to a decision to build 24 km of road to primary standards, rather than secondary as planned. The other shortfalls in secondary roads were due to a difference in viewpoint between the Company and the Ministry whereby the Company expected to be able to fund secondary roads within cut blocks as part of the FMA, but the Ministry thought otherwise. The Company then built many of these planned secondary roads at their own expense. One secondary road, called Mary Lake was not planned but was built to access a blowdown area for salvage operations. Maintenance kilometres amounted to only 73% of planned because of these fewer secondary roads to be maintained.

Comparisons between the Operating Plan map of planned road locations and a subsequent map of their actual locations showed many differences, some of them major. In six cases, roads were built that were not even shown on the original plan. The cause was traced to the Operating Plan Map (1:126,720) which showed only general locations for the planned roads, and this was the map presented to the public. Accurate planned locations were available on working maps (1:15,840) which formed part of the operating plan and few deviations in actual locations from these planned roads were identified.

RECOMMENDATION: That the Company present accurate road locations to the public during the planning process.

On the **EAST PATRICIA FOREST**, all roads are built by contractors. Roads are inspected at intervals by the Company road engineer for partial payments to the contractor. Roads are then examined jointly by a Ministry and a Company representative to verify standards and measure lengths. If roads are not up to standards they are redone before invoicing. This procedure and the generally higher road standards of the Company ensured that in no case during the period under review was an invoice refused because roads were sub-standard.

2.6 COMPANY RECORDS

Silvicultural treatments on the **EAST PATRICIA FOREST** are colour coded on mylar maps. Map prints are compiled in loose-leaf books where again coloured outline areas indicate annual projects within named blocks. Record sheets, also retained in the books with the maps, provide additional information about the projects, such as, areas treated. Calculation of areas by team members using a Pneumonics Graphic Calculator showed that 1 of the 2 site preparation areas checked was identical (to 1 decimal) with that recorded, and the second differed by only 1%. The record system permits maintenance of accurate records for silvicultural work. The team had some reservations about the use of names for blocks when the list of treated areas becomes long in years to come, and they found that tracking treatments was not always as easy as it might have been. A numerical system would perhaps be more practical especially in view of the Company's move to a Geographic Information System (GIS).

The Company has not received the records of the Ministry's pre and post FMA silvicultural treatments conducted on the agreement area. These records are necessary for effective management.

RECOMMENDATION: That the Ministry provide the Company with all silvicultural records of their work conducted on the FMA.

2.7 ANNUAL REPORTS

Paragraph 38 of the agreement requires that the holder prepare an annual report in accordance with the Forest Management Manual summarizing certain aspects of operations during the preceding year.

The committee found that, except for one year, annual reports were submitted on time. However, several additional months usually passed before all corrections and changes were completed. Of three annual reports checked, total site preparation reported was verified on two, and the third differed only because some invoices were held for billing until the next fiscal year. Thus the annual reports appeared to be accurate after all corrections had been completed.

RECOMMENDATION: That the Company and Ministry ensure agreement of figures prior to submission of annual reports so that the reports may be both on time and accurate.

2.8 INTEGRATION WITH OTHER FOREST USES

Section 13 of the ground rules, entitled Modified Management Areas, explains how the Ministry, in consultation with the Company, will identify and delineate on FRI Forest Stand Maps, during the preparation of each Five-Year Operating Plan, areas to be managed to meet objectives other than those of wood fibre production. It states that some form of harvesting and regeneration is intended in these areas where possible, and three kinds of MMAs are specified:

(i) Areas that the Company will be allowed to harvest at the time of the initial cut.

(ii) Areas that the Company will be allowed to harvest at a future date, (i.e. leave areas).

(iii) Areas that the Company will not be allowed to harvest, (i.e. no harvest areas).

The Company had prepared a statement entitled "Management Practices on the East Patricia Forest" that detailed how exclusions and MMAs were to be handled on this forest, but unfortunately neither this document nor any summary of Ministry designated MMAs were included in the Operating Plan. Therefore, it was impossible to determine from the plan how the Company intended to implement the requirements. The committee believes that good planning principles require such details to be included in this public document.

The **EAST PATRICIA FOREST** is a major recreational area with eight cottage subdivisions and 40 tourist lodges, some of the latter operating outpost camps as well. However, because the major road systems have long been established, most of the lodges cater to tourists who arrive by road and are not especially oriented toward fly-in operations. This situation eased somewhat the problems that might otherwise have arisen with road location. The Company took reasonable care to avoid destroying tourism values and is to be commended for doing so.

Because of the generally east-west flow of both water and road traffic in this forest, water crossings were minimized. The one major water crossing was well handled. Most culverts were suitably placed. In one case observed on the field trip a large double culvert had been washed out, with potential damage to down stream water quality and fisheries values.

RECOMMENDATION: That the Company review and routinely apply not only the mandatory requirements but also the good practices described in the Environmental Guidelines for Access Roads and Water Crossings (MNR 1988).

Some clear cuts on the **EAST PATRICIA FOREST** were fairly large. The committee saw one on a field trip that was about two kilometres across. However, in most areas, terrain and the use of MMAs broke up the clear cuts so as to retain good moose habitat. Many eagle nests have been located on this forest and the Company had them marked on their mylar record maps, but time did not permit verification of practices near nests in the field.

3. MAINTENANCE AND PRODUCTIVITY

Table 2 shows the MAD which was calculated for the **EAST PATRICIA FOREST** for the five-year period 1984-1989. The levels of harvest are below the minimum allowed for all working groups.

The annual reports indicate that 5,106 hectares (MNR 1,542; Company 3,564) have received artificial regeneration treatment. A total of 5,105 hectares (MNR 810; Company 4,295) have been site prepared with an additional 1,597 hectares (MNR 270; Company 1,327) having been tended. These figures are for the pine and spruce working groups. No areas were identified for natural regeneration in the pine, spruce or poplar working groups. The total renewal during the five-year period represents approximately 91% of the harvested area for the pine and spruce working groups.

The Company achieved 74% of their planned renewal of recent cutover and indicated their desire to approach full renewal of the harvested pine and spruce working groups and conversion of the balsam working group.

The Company's records do not identify or record non-harvest depletions such as by-pass, no return MMA, and inoperable areas. Failure to classify these areas could lead to an inflated MAD in the future.

The Forest Management Agreement does not require the carrying out of stocking assessments or regeneration surveys during the first five-year period. It should be noted, however, that information on stocking, density and growth is not only necessary to measure the level of success of any regeneration programme but also as a predictor for future productivity. The Company intends to institute this during the second period of the agreement.

Free-to-grow (FTG) assessments have been conducted on the agreement area. There seems to be some confusion between the Company and the Ministry over the exact areas which have been assessed and identified as FTG. There is concern by both agencies over the lack of sufficient funds to conduct these surveys as the amount of area increases.

RECOMMENDATION: That the Company record and track all depletions from the commencement of the FMA and continue in the future on an annual basis.

RECOMMENDATION: That the Company and the Ministry improve communications in the area of FTG with respect to their responsibilities in the annual work schedule and annual report.

4. COMPANY CONCERNS

The Company was provided the opportunity to express any concerns that it might have with regards to FMA 501900 or with regard to the Ministry's administration of the agreement. Senior management of Boise Cascade Canada Limited, though generally satisfied with the workings of the FMA, expressed concerns as follows:

- The FMA program should be reviewed and analyzed on a long term basis to determine the appropriate levels of commitment and funding.

- There appears to be insufficient nursery stock available on a regional basis to meet the current or future requirements for both FMA and Crown Units.

- If there are sufficient funds available, FMA holders should be given the flexibility to determine which of the eligible roads are built and invoiced.

- It is becoming increasingly difficult to predict what the level of FMA funding will be and what new restrictions will be placed on the available funds. The distribution and notification dates are getting later and later each year to the point where it is interfering with planning and execution of our program.

- The submission date for the Annual Work Schedule for FMA units should be changed from November 30 to January 31 to be consistent with Crown and company management units.

- Black spruce seedlings grown in small Spencer Lemaire - Ferdinand Book containers are not large enough to withstand the rapid growth of competition on our productive sites.

- As the FMA program evolves, the role of the DCR and support staff should be reviewed and modified to reflect the changes in responsibility.

- We have experienced an extremely high turnover rate of OMNR personnel at the DCR and forest supervisor positions. This makes it hard to develop good working relationships at the local or field levels.

- The Crown management units should be reviewed and analyzed on a long term basis to determine the appropriate levels of commitment and funding. The management practices on these units should be audited similar to FMAs, by independent auditors.

5. CONCLUSIONS AND RECOMMENDATIONS

The review committee was satisfied that the obligations of the Company under the agreement have been satisfactorily performed by the Company during the five-year term under review. The committee was impressed with the organization and intensity of silvicultural effort by the Company and the commitment to the success of regenerating the **EAST PATRICIA FOREST**.

RECOMMENDATION 1: That the Minister extend the remaining period of FMA 501900 by a further term of five consecutive years to March 31, 2009.

RECOMMENDATION 2: That the Company and the Ministry jointly review the treatable status of lands cut over during this five-year term for which Table 1 of the ground rules specifies treatment but which have received no treatment or plans for treatment, and that the Company report any areas mutually agreed to be non-treatable in the 1990-1991 annual report.

RECOMMENDATION 3: That the Company request an amendment to the ground rules when they are unable to meet the requirement of Table 1 of the ground rules.

RECOMMENDATION 4: That Company and Ministry officials take immediate action to resolve differences in negotiations for new ground rules.[1]

RECOMMENDATION 5: That the Company improve its records so that the forecasted harvest by area and resulting yields may be more accurately determined.

RECOMMENDATION 6: That in the event the Company should forecast harvest levels below 90 percent of those in the current plan, the Company should declare surplus, enter into third party agreements or request an undercut variation from the Minister.

RECOMMENDATION 7: That the Company indicate in their silvicultural records the class of NSR which was treated.

RECOMMENDATION 8: That the Ministry's required reporting forms remain the same during the five-year planning period.

RECOMMENDATION 9: That the Ministry recognize that the Company has met its obligation in the treatment of NSR land for the five-year period.

RECOMMENDATION 10: That the Company present accurate road locations to the public during the planning process.

RECOMMENDATION 11: That the Ministry provide the Company with all silvicultural records of their work conducted on the FMA.

RECOMMENDATION 12: That the Company and Ministry ensure agreement of figures prior to submission of annual reports so that the reports may be both on time and accurate.

RECOMMENDATION 13: That the Company review and routinely apply not only the mandatory requirements but also the good practices described in the Environmental Guidelines for Access Roads and Water Crossings (MNR 1988).

RECOMMENDATION 14: That the Company record and track all depletions from the commencement of the FMA and continue in the future on an annual basis.

RECOMMENDATION 15: That the Company and the Ministry improve communications in the area of FTG with respect to their responsibilities in the annual work schedule and annual report.

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[1] Ground rules have subsequently been agreed to.

FIVE-YEAR REVIEW
BOISE CASCADE CANADA LIMITED

LAKE OF THE WOODS FOREST
AGREEMENT 502000
1984-1989

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1. INTRODUCTION

1.1 PURPOSE OF THE REVIEW

The Ministry of Natural Resources and Boise Cascade Canada Limited signed a Forest Management Agreement (FMA) for the **LAKE OF THE WOODS FOREST**, located east of Kenora, on April 2, 1984. The purpose of the agreement was to provide for a continuous supply of forest products to the Company's mills at Kenora, Keewatin and Fort Frances, Ontario and to ensure that the forests of the **LAKE OF THE WOODS FOREST** are harvested and regenerated to produce successive crops of timber on a sustained yield basis.

This review of the first five consecutive years of the agreement was conducted on the **LAKE OF THE WOODS FOREST** to determine whether the obligations of the Company under the agreement have been satisfactorily performed and to recommend to the Minister of Natural Resources whether the remaining period of the agreement should be extended for a further term of five years.

1.2 THE REVIEW COMMITTEE

The review was carried out by a committee of three, engaged by the Ministry of Natural Resources for this purpose. The committee members were:

- Mr. R. A. Baxter, Director of Operations,
  Northern Ontario, Ministry of Natural Resources
  (Retired), Committee Chairman,

- Dr. H. G. Cumming, Professor,
  Fish and Wildlife Management, School of Forestry,
  Lakehead University, and

- Mr. R. Clarke, Associate Professor,
  Silviculture and Management Planning,
  School of Forestry, Lakehead University.

1.3 TASKS OF THE REVIEW COMMITTEE

The review committee's assignment was to undertake a fair and objective review of Boise Cascade Canada Limited's performance on the **LAKE OF THE WOODS FOREST** during its first five-year term vis-a-vis its obligations under Forest Management Agreement 502000 and to make recommendations to the Minister of Natural Resources on the extension of the agreement's term according to the "Evergreen" section of the agreement (i.e. Section 15, paragraph 33).

The review was conducted by:

- examining the management, operating and annual plans, and the annual reports prepared by the Company with regard to their submission dates and their acceptability to the Ministry,
- inspecting the depletion, silvicultural and access road records for adequacy and for conformity with the management plans and the ground rules of the agreement,
- comparing the levels of harvest and treatment of not satisfactorily regenerated (NSR) lands outlined in the annual reports with the levels required by provisions of the agreement,
- selecting and field inspecting harvest cuts, silvicultural projects, and road construction typical of the techniques employed on the forest for conformity with the agreement holder's records and for field application of the ground rules,
- determining the degree to which other forest users and other forest values are accommodated in management planning and in field operations, and
- meeting with Company and Ministry district staff to identify problem areas and agreement concerns on the part of either party.

The **LAKE OF THE WOODS** and **EAST PATRICIA FORESTS**, FMAs 502000 and 501900 have been amalgamated commencing April 1, 1989 into the **PATRICIA FOREST**. Data for the **LAKE OF THE WOODS** and **EAST PATRICIA FORESTS** for the next five-year term refer to the **PATRICIA FOREST**, FMA 502000.

2. PROCEDURES AND FINDINGS

2.1 MANAGEMENT PLANNING

2.1.1 THE PREPARATION OF PLANS

Paragraphs 6(1), 10(1), 11(1), and 15(1) of the agreement require the Company to prepare management and operating plans and a series of annual plans. These plans must be prepared and submitted according to the timeframes specified in the agreement and according to the manual that has been approved by the Minister for this purpose.

The Forest Management Agreement was signed on April 2, 1984 and the management plan was due twelve months later. Extensions to this date were granted by the Ministry until after the five-year operating plan was approved. The plan was submitted February 27, 1987 and approved April 10, 1987.

The operating plan for the 1984 to 1989 period was due October 1, 1984. An extension was granted to January 1, 1985, and the plan was submitted January 2, 1985. Alterations were requested by the Ministry and the plan was resubmitted on February 24, 1986 and approved July 8, 1986.

The extended period for submitting the operating plan was partially due to the time required to resolve a difference of interpretation as to who was responsible for the preparation of the Modified Management Areas (MMAs), Company or Ministry, and to reach agreement with the Ministry as to the volume estimates in the plan. It was also due in part to the workload placed on the forestry staff of the Company to prepare three operating plus three annual plans in the same period of time (i.e. for the **LAKE OF THE WOODS, EAST PATRICIA** and **PAKWASH** FMAs).

The annual plan for the first year of the agreement (1984-1985) was prepared under licence 326700. The annual plans or work schedules for the remainder of the years under review were submitted by the due dates. However, they were all returned to the Company for alterations.

The committee noted that the annual work schedule (AWS) for 1988-1989 did not contain a listing in the appendices of the stands which had been selected for depletion during the period of the schedule as required under Section 5.1.3 (Depletion Area) of the Timber Management Planning Manual for Crown Lands in Ontario. In discussions with both Company and District staff, it was their opinion that this listing is not required.

RECOMMENDATION: That the Ministry carry out a review of the requirement under Section 5.1.3 of the Timber Management Planning Manual for Crown Lands in Ontario, for the listing in the appendices of stands which have been selected for depletion during the period of the schedule, to determine if the listing should be continued as a requirement.

The Company had prepared a Timber Management Plan for the second five-year term for the **PATRICIA FOREST** agreement in accordance with the Timber Management Planning Manual for Crown Lands in Ontario. The new plan was submitted prior to the due date of October 1, 1988, returned to the Company for alterations, resubmitted and received approval by the Ministry on March 1, 1989.

In conclusion, although extensions were granted by the Ministry for the submission of the twenty-year management plan and the five year operating plan, and all plans were returned for alterations, the Company met its management planning obligations.

2.1.2 PLAN IMPLEMENTATION

The agreement requires that the Company conduct its operations in accordance with the approved management, operating and annual plans. The accomplishments of the Company in silvicultural operations and road construction are summarized in Table 1.

The review committee examined the harvest cut and road construction records of the Company and found them to be generally in conformity with the areas allocated for harvest and the road locations specified in the management documents. Several minor deviations from the approved cutting areas were recorded. Amendments to the plans were requested and approved both in harvest allocation and road location. The level of regeneration, access construction, site preparation and harvest were lower than planned while tending was above planned as portrayed in Figure 1.

TABLE 1

Summary of the Company's forest operations at Ministry expense for 1984-89.

FMA EXPENDITURE AND ACCOMPLISHMENT REPORT FOR THE FIVE-YEAR TERM 1984-1989

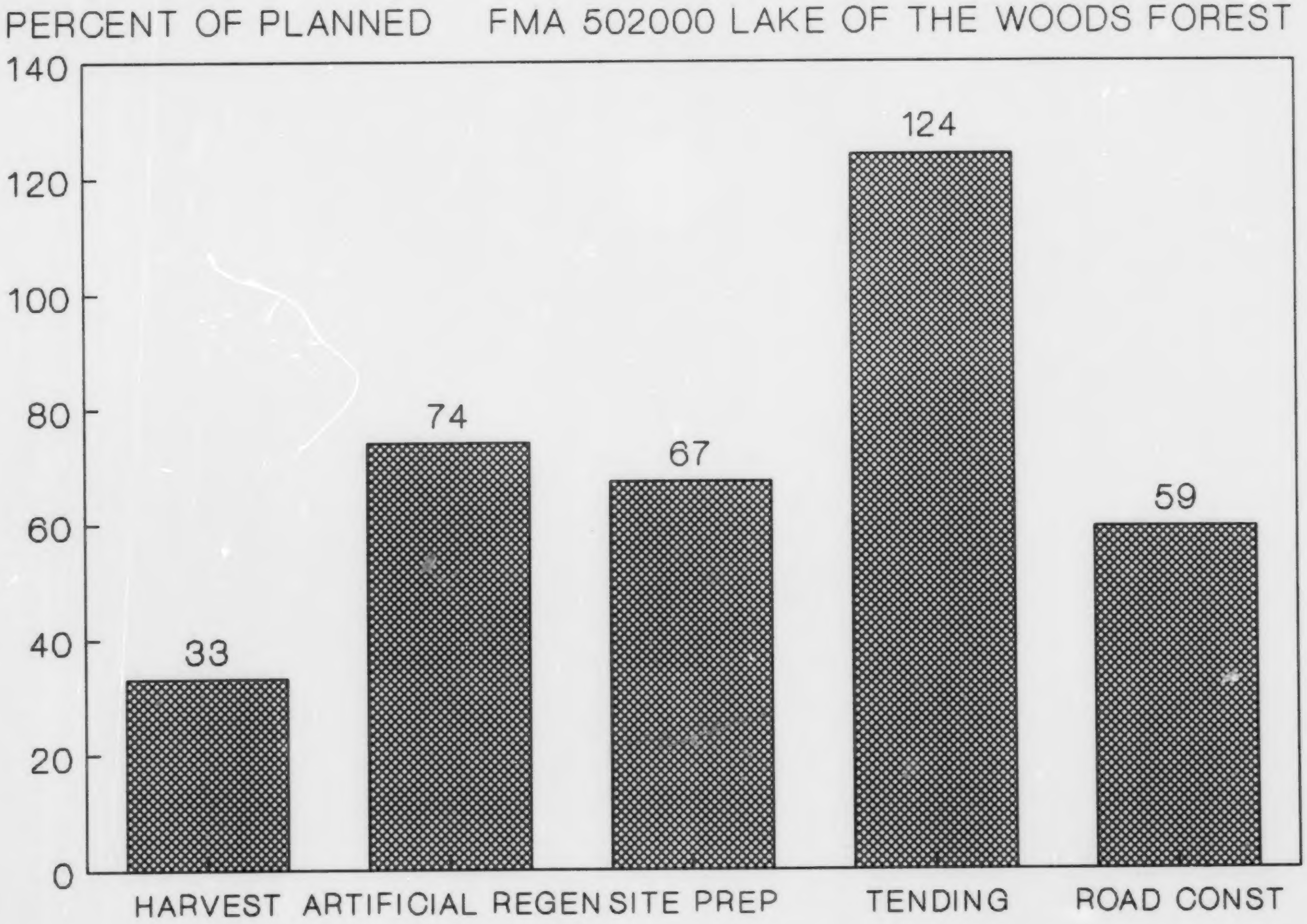
FMA 502000
LAKE OF THE WOODS FOREST
BOISE CASCADE CANADA LTD.

ACTIVITY	HECTARES	DOLLARS
HARVEST CUT	3,201	
NATURAL REGENERATION	--	
ARTIFICIAL REGENERATION		
PLANTING BAREROOT	631	
PLANTING CONTAINER	397	
SEEDING DIRECT	632	
SEEDING WITH SITE PREP	614	
TOTAL ARTIFICIAL	2,274	
TOTAL REGENERATION	2,274	
TENDING		
CHEMICAL CLEANING/AERIAL	2,106	
CHEMICAL CLEANING/GROUND	--	
MANUAL CLEANING	--	
TOTAL TENDING	2,106	
SITE PREPARATION		
MECHANICAL	2,475	
CHEMICAL	--	
PRESCRIBED BURN	--	
TOTAL SITE PREPARATION	2,475	
MNR SILVICULTURAL PAYMENTS		$ 1,135,013
ROAD CONSTRUCTION	**KILOMETRES**	**DOLLARS**
PRIMARY	--	--
SECONDARY	87.3	$ 560,400
TOTAL CONSTRUCTION	87.3	$ 560,400
ROAD MAINTENANCE	227.8	$ 106,200
MNR TOTAL ROAD PAYMENTS		$ 666,600
TOTAL PAYMENTS		$1,801,613

Note: This table represents activities carried out by the Company, and the associated costs to MNR. As part of the MNR obligation under the Agreement, Forest Management Activities were also conducted by MNR, at additional expense.

Data Source: Audit Sections 4.1.1 to 4.4.2 supplied by MNR.

FIGURE 1: COMPARISON OF OPERATING PLAN VS ACTUAL



Reasons for the low level of harvest are provided in Section 2.3 and for the low level of road construction in Section 2.5 of this report. Regeneration levels did not meet the planned objective due in part to the low level of harvesting, which resulted in fewer hectares available for treatment.

2.2 THE GROUND RULES

2.2.1 KNOWLEDGE AND FAMILIARITY WITH THE GROUND RULES AND THE AGREEMENT

Based on discussions held with the Company, both in the office and field, it was apparent to the review committee that the Company staff were knowledgeable and familiar with the provisions of the ground rules and the agreement.

2.2.2 CONFORMITY OF HARVEST AND SILVICULTURAL OPERATIONS WITH THE GROUND RULES

The committee's examinations of silvicultural records, its field inspections and its discussions with the designated Crown representative (DCR) all confirmed that harvesting and silvicultural operations have been conducted in accordance with the ground rules.

The ground rules permit the classification of non-treatable sites by mutual agreement. Any area may be classed as non-treatable where extremes in topography, shallowness of soil, excessive rock, poor drainage or inaccessibility make it uneconomical or impractical to treat. Non-treatable areas either allocated for harvesting in the operating plan or depleted for other reasons during the operating plan period were to be included in the depletion section of the annual report. To date, only 68.8 hectares (ha) have been declared as non-treatable on the **LAKE OF THE WOODS FOREST** despite the fact that 3,201 hectares have been harvested.

The review committee is concerned that non-treatable areas may have been overlooked by both parties and that a failure to classify them will result in disputed retreatment obligations.

RECOMMENDATION: That the Company and the Ministry jointly review the treatable status of lands cut over during this five-year term for which Table 1 of the ground rules specifies treatment but which have received no treatment or plans for treatment, and that the Company report any areas mutually agreed to be non-treatable in the 1990-1991 annual report.

Paragraph 14(3) of the agreement allows for the ground rules to be amended by mutual agreement provided that the amendments are consistent with the management plan and operating plan. The committee noted that in the annual work plans, the Company stated that the number of trees planted per hectare may be less than those stated in Table 1 of the ground rules. However, they did not request an amendment to the ground rules.

RECOMMENDATION: That the Company request an amendment to the ground rules when they are unable to meet the requirement of Table 1 of the ground rules.

2.2.3 CONFORMITY OF INVOICING PRACTICES WITH THE GROUND RULES

The invoicing procedures of the Company were found to be in conformity with those specified in the ground rules. The Company and Ministry representatives reconciled any differences in hectares treated, number of trees planted or kilometres (km) of road constructed or maintained, before submission of invoices.

2.2.4 THE PREPARATION OF NEW GROUND RULES

The Forest Management Agreement with the Company requires both parties to commence the preparation of new ground rules for the next five-year term at least eight months prior to the expiry of the old ground rules, and to agree upon those new ground rules on or before the expiry date of March 31, 1989. The committee notes that the preparation of the new ground rules commenced prior to the required date but at the time of the five-year review, August 21, 1989, the ground rules had not been agreed to by the Company and MNR District.

RECOMMENDATION: That Company and Ministry officials take immediate action to resolve differences in negotiations for new ground rules.[1]

2.3 HARVEST LEVELS, ALLOWABLE DEPLETION, YIELDS AND WOOD FLOW

According to paragraph 20(1) of the agreement, the Company has agreed to maintain its harvest on the **LAKE OF THE WOODS FOREST** at a level between 90% and 110% of the calculated allowable depletion (allowable cut) for each working group. The Company may request the Minister to authorize variations to those levels specified in the agreement.

Paragraphs 20(3) and 20(4) of the agreement provide for either a remedy or liquidated damages in the event of an overcut or undercut, respectively, on the area under agreement. The agreement holder may avoid liquidated damages through the declaration of timber surplus to its needs in an approved management plan, however, liquidated damages do not apply in the first five-year term of a Forest Management Agreement.

Table 2 provides information in hectares by working group for maximum allowable depletion (MAD), forecasted harvest, actual harvest and the percentage deficit between actual and forecasted harvest.

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[1] Ground rules have subsequently been agreed to.

TABLE 2: **LAKE OF THE WOODS FOREST FMA 502000**

Comparison in hectares of the maximum allowable depletion, forecasted harvest from the operating plan and actual harvest levels by working group for the period 1984-1989 and the percentage difference between the forecasted harvest and actual harvest.

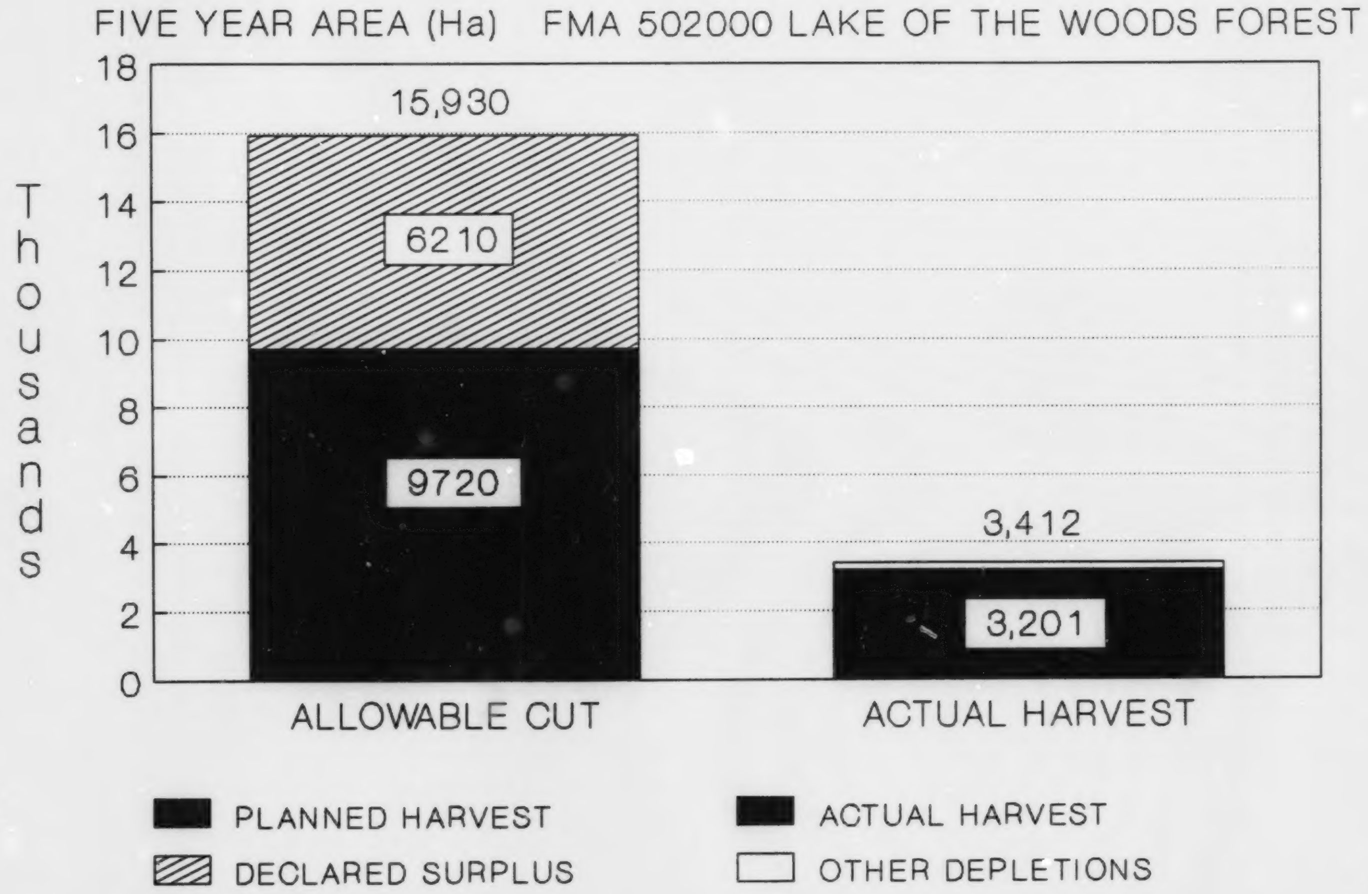
WORKING GROUP	MAD	FORECASTED HARVEST	ACTUAL HARVEST	PERCENT ACTUAL VS FORECASTED
PINE	4895	4895	1959	40
SPRUCE	3290	3290	941	29
BALSAM	3380	675	85	13
POPLAR	4365	860	216	25
TOTAL	15930	9720	3201	33

TABLE 3: **LAKE OF THE WOODS FOREST FMA 502000**

Comparison of forecasted and actual volumes in cubic metres (m^3) by species and the percentage difference.

SPECIES	FORECAST M^3	ACTUAL M^3	PERCENT ACTUAL VS FORECASTED
PINE	309107	247022	80
SPRUCE & BALSAM	227456	121864	54
POPLAR	--	1209	--
OTHER HARDWOODS		220	

FIGURE 2: COMPARISON OF ALLOWABLE DEPLETION AND HARVEST



The Company declared surpluses in the balsam and poplar working groups of 2705 and 3505 hectares respectively (Figure 2). Even with these declared surpluses the Company was unable to meet its forecasted harvest commitment by area in any of the working groups.

Table 3 provides information regarding the forecasted volume and actual volumes in cubic metres by individual species. The deficit by volume is 20 percent for pine and 46 percent for spruce and balsam. The Company did not harvest near the forecasted volumes by species. The spruce/balsam volumes obtained from other sources were higher than forecasted. This plus the fact that the Kenora sawmill did not operate at capacity contributed to the shortfall in the forecasted volumes. The Company utilizes a small proportion of balsam and very little hardwood. The Company, through the timber management planning process, will identify the utilization of the available wood supply.

The Company indicated in the Operating Plan that neither the Company nor the Ministry kept depletion records prior to 1984, making it difficult to predict yields for the period 1984-1989. The predicted yields for 1984-1989 were obtained from operational cruise (OPC) and the forest resources inventory (FRI). From Table 3 it appears that the actual yields per hectare were higher than forecasted. This would contribute in part to an overestimate of the forecasted harvest by area. Close attention should be made in recording yields of species by working group. The Company should recognize the influence that depletions other than harvest, such as MMAs, by-pass and roads have on the future MAD. The experience gained and records of depletion for the 1984-1989 period should result in more accurate forecasts for the next five-year period.

RECOMMENDATION: That the Company improve its records so that the forecasted harvest by area and resulting yields may be more accurately determined.

RECOMMENDATION: That in the event the Company should forecast harvest levels below 90 percent of those in the current plan, the Company should declare surplus, enter into third party agreements or request an undercut variation from the Minister.

2.4 NSR OBLIGATIONS

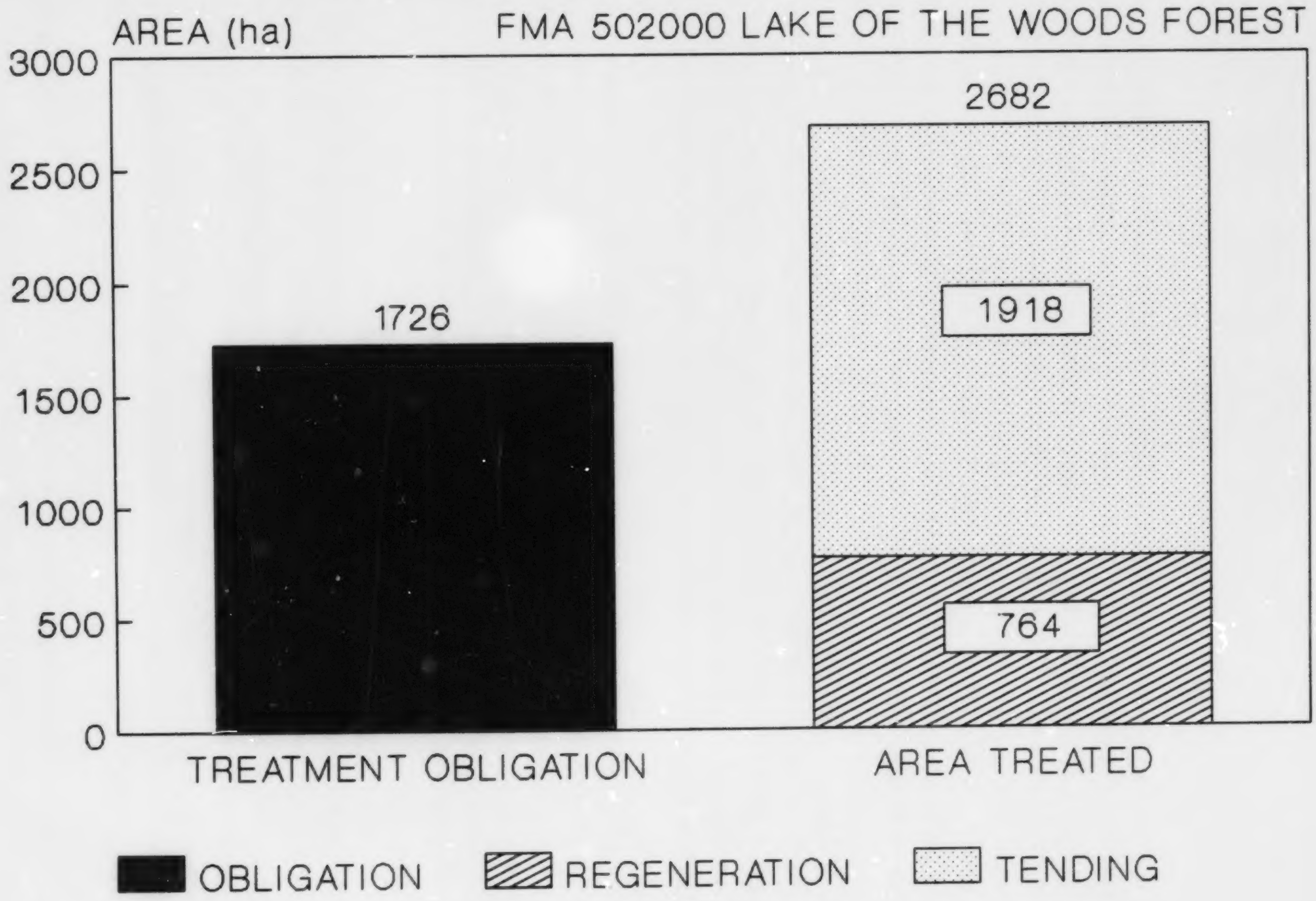
The Company was obligated to treat 1,726 hectares of NSR 2 and 3 land (Figure 3). The Company during the first five years has site prepared 800 hectares, regenerated 764 hectares and tended 1,918 hectares of NSR land.

The Company did not record the class of NSR treated in their silvicultural records nor does the Ministry's Annual Report Forms require differentiation. Further, the recently required Ministry forms do not differentiate between NSR and barren and scattered (B&S).

It is the audit team's opinion that the Company has surpassed its obligations in the NSR classed lands.

RECOMMENDATION: That the Company indicate in their silvicultural records the class of NSR which was treated.

FIGURE 3: COMPARISON OF NSR TREATMENT OBLIGATIONS AND NSR TREATMENT 1984-89



RECOMMENDATION: That the Ministry's required reporting forms remain the same during the five-year planning period.

RECOMMENDATION: That the Ministry recognize that the Company has met its obligation in the treatment of NSR land for the five-year period.

2.5 ROAD CONSTRUCTION AND MAINTENANCE

Paragraph 31 of the agreement provides for the Minister to reimburse the Company, subject to a maximum amount per kilometre, for the construction, reconstruction, and maintenance of forest access roads on the agreement area. To be eligible for payment, roads must be included in approved annual plans and constructed according to the standards specified in Schedule "E" of the agreement.

On **LAKE OF THE WOODS FOREST** where road transport was required prior to 1984, winter roads were used in many places since silvicultural requirements were not a consideration by the Company. Still, an extensive network of roads existed prior to the signing of the FMA. Major access had been provided by Highways 17 and 671 totalling about 180 km. In addition to these roads, the Company had built some 97 km of all weather roads, and a substantial network of tertiary roads. With this extensive road network in place, most of the road building during the first five years of the FMA aimed at upgrading these older roads to FMA standards (about 80% of the FMA road building activities were directed toward reconstruction), in order to access scattered blocks left from earlier logging.

Figure 1 shows that total road construction was 59 percent of planned. Of the 35 km of primary road planned none were built and of the 110 km of secondary roads planned only 85 km were built. The explanation by the Company was that fewer funds than requested were available for roads and other Company FMA areas required additional roads more than the **LAKE OF THE WOODS FOREST**. Therefore, the annual request for funds was directed toward those other forests. Road maintenance activities amounted to 96 percent of planned.

Maps of actual road locations differed from planned locations shown on the Operating Plan map in many places. These were explained by the Company as being due to poor mapping. In some cases, alternate possible locations were shown on the mylars that did not appear on the public maps. In two instances the difference between the map shown to the public and the road planned on Company maps (1:15,840) was so great that a minor amendment was required by the Ministry for the Company to build the road in the original planned location. Even the mylar maps showed unexplained deviations between planned roads and actual. In two instances, an existing road was not properly located on a mylar map.

RECOMMENDATION: That the Company must improve the accuracy of road mapping and present the most accurate and current information available during the public involvement in the planning process.

On the **LAKE OF THE WOODS FOREST**, all roads are built by contractors. Roads are inspected at intervals by the Company road engineer for partial payments to the contractor. Roads are then examined jointly by a Ministry and a Company representative to verify standards and measure lengths. If roads are not up to standards they are redone before invoicing. This procedure and the generally higher road standards of the Company ensured that in no case during the period under review was an invoice refused because roads were sub-standard.

2.6 COMPANY RECORDS

Silvicultural treatments on the **LAKE OF THE WOODS FOREST** are colour coded on mylar maps. Map prints are compiled in loose-leaf books where again coloured outline areas indicate annual projects within named blocks. Record sheets, also retained in the books with the maps, provide additional information about the projects, such as, areas treated. Calculation of areas by team members using a Pneumonics Graphic Calculator showed two site preparation areas to be as recorded. The record system permits maintenance of accurate records for silvicultural work. The team had some reservations about the use of names for blocks when the list of treated areas becomes long in years to come. A numerical system would perhaps be more practical, especially in view of the Company's move to a Geographic Information System (GIS).

The Company has not received the records of the Ministry's pre and post FMA silvicultural activities conducted on the agreement area. These records are necessary for effective management.

RECOMMENDATION: That the Ministry provide the Company with all silvicultural records of their work conducted on the FMA.

2.7 ANNUAL REPORTS

Paragraph 38 of the agreement requires that the holder prepare an annual report in accordance with the Forest Management Manual summarizing certain aspects of operations during the preceding year.

The committee found that, except for one year, annual reports were submitted on time. However, several additional months usually passed before all corrections and changes were completed. Site preparation totals for two annual reports checked were correct. Thus the annual reports appeared to be accurate after all corrections had been completed.

RECOMMENDATION: That the Company and Ministry ensure agreement of figures prior to submission of annual reports so that the reports may be both on time and accurate.

2.8 INTEGRATION WITH OTHER FOREST USES

Section 13 of the ground rules, entitled Modified Management Areas, explains how the Ministry, in consultation with the Company, will identify and delineate on FRI Forest Stand Maps during the preparation of each Five-Year Operating Plan. These areas are to be managed to meet objectives other than those of wood fibre production. It states that some form of harvesting and regeneration is intended in these areas where possible, and three kinds of MMAs are specified:

(i) Areas that the Company will be allowed to harvest at the time of the initial cut.

(ii) Areas that the Company will be allowed to harvest at a future date (i.e. leave areas).

(iii) Areas that the Company will not be allowed to harvest, (i.e. no harvest areas).

Neither the management plan nor the operating plan explained the purpose of these MMAs, or their prescriptions. Therefore, it was impossible to determine from these plans how the Company intended to implement the requirements. The policy statement for the **EAST PATRICIA FOREST** was said to apply to the **LAKE OF THE WOODS FOREST** as well, but no specific statement for this latter forest was available. The Company was able to produce Ministry print-outs listing MMAs along with purposes and prescriptions, but these had not been included in the Operating Plan. The committee believes that good planning principles require such details to be included in this public document. The new Timber Planning Manual should ensure that better plans are produced in future. Cutover sizes were reasonable and MMAs appeared to be well used.

No new major water crossings were constructed in this forest during the five-year period being reviewed. In the northern portion, once the Wabigoon River had been crossed, most of the roads were laid out with the east-west drainage so that fewer crossings were necessary. However, crossings continued to concern the Ministry staff, with several of the crossings in the southern portion of the forest producing some concern, small or large. For example, some older culverts had been deliberately allowed to wash out posing potential hazards for water quality and fisheries down stream.

RECOMMENDATION: That the Company review and routinely apply both the mandatory requirements and the good practices described in the Environmental Guidelines for Access Roads and Water Crossings (MNR 1988).

3. MAINTENANCE AND PRODUCTIVITY

Table 2 shows the MAD which was calculated for the **LAKE OF THE WOODS** for the five-year period 1984-1989. The levels of harvest are below the minimum allowed for all working groups.

The annual reports indicate that 2855 hectares (MNR 581; Company 2,274) have received artificial regeneration treatment. A total of 2924 hectares (MNR 449; Company 2,475) have been site prepared with an additional 2,968 hectares (MNR 862; Company 2,106) having been tended. The Company retreated 111 hectares at their cost. These figures are for the pine and spruce working groups. No areas were identified for natural regeneration in the pine, spruce or poplar working groups. The total renewal during the five-year period represents approximately 98% of the harvested area for the pine and spruce working groups. A total of 101% of these two working groups was site prepared for renewal treatments. The above figures include NSR land.

The total renewal during the five-year period represents 89% of the harvested area. The Company has indicated their desire to approach full renewal of the harvested pine and spruce working groups. If the Company continues renewal at the same level as their accomplishment for recent cutover plus NSR, they can realistically achieve this objective.

The Company's records do not identify or record non-harvest depletions such as by-pass, no return MMA, and inoperable areas. Failure to classify these areas could lead to an inflated MAD in the future.

The Forest Management Agreement does not require the carrying out of stocking assessments or regeneration surveys during the first five-year period. It should be noted, however, that information on stocking, density and growth is not only necessary to measure the level of success of any regeneration programme but also as a predictor for future productivity. The Company intends to institute this during the second period of the agreement.

The Company has requested free-to-grow (FTG) assessments in their annual work schedules (AWS) for treated and untreated areas. There seems to be some confusion between the Company and the Ministry over the exact areas which have been assessed and identified as FTG. There is concern by both agencies over the lack of sufficient funds to conduct these surveys as the amount of area increases.

RECOMMENDATION: That the Company record and track all depletions from the commencement of the FMA and continue in the future on an annual basis.

RECOMMENDATION: That the Company and the Ministry improve communications in the area of FTG with respect to their responsibilities in the annual work schedule and annual report.

4. COMPANY CONCERNS

The Company was provided the opportunity to express any concerns that it might have with regard to FMA 502000 or with regard to the Ministry's administration of the agreement. Senior management of Boise Cascade Canada Limited, though generally satisfied with the workings of the FMA, expressed concerns as follows:

- The FMA program should be reviewed and analyzed on a long term basis to determine the appropriate levels of commitment and funding.

- There appears to be insufficient nursery stock available on a regional basis to meet the current or future requirements for both FMA and Crown Units.

- If there are sufficient funds available, FMA holders should be given the flexibility to determine which of the eligible roads are built and invoiced.

- It is becoming increasing difficult to predict what the level of FMA funding will be and what new restrictions will be placed on the available funds. The distribution and notification dates are getting later and later each year to the point where they are interfering with planning and execution of our program.

- The submission date for the Annual Work Schedule for FMA units should be changed from December 1 to January 31 to be consistent with Crown and company management units.
- Black spruce seedlings grown in small Spencer Lemaire - Ferdinand Book containers are not large enough to withstand the rapid growth of competition on our productive sites.
- As the FMA program evolves, the role of the DCR and support staff should be reviewed and modified to reflect the changes in responsibility.
- We have experienced an extremely high turnover rate of OMNR personnel at the DCR and forest supervisor positions. This makes it hard to develop good working relationships at the local or field levels.
- The Crown management units should be reviewed and analyzed on a long term basis to determine the appropriate levels of commitment and funding. The management practices on these units should be audited similar to FMAs, by independent auditors.

5. CONCLUSIONS AND RECOMMENDATIONS

The review committee was satisfied that the obligations of the Company under the agreement have been satisfactorily performed by the Company during the five-year term under review. The committee was impressed with the organization and intensity of silvicultural effort by the Company and the commitment to the success of regenerating the **LAKE OF THE WOODS FOREST**.

RECOMMENDATION 1: That the Ministry extend the remaining period of FMA 502000 by a further term of five consecutive years to March 31, 2009.

RECOMMENDATION 2: That the Ministry carry out a review of the requirement under Section 5.1.3. of the Timber Management Planning Manual for Crown Lands in Ontario, for the listing in the appendices of stands which have been selected for depletion during the period of the schedule, to determine if the listing should be continued as a requirement.

RECOMMENDATION 3: That the Company and the Ministry jointly review the treatable status of lands cut over during this five-year term for which Table 1 of the ground rules specifies treatment but which have received no treatment or plans for treatment, and that the Company report any areas mutually agreed to be non-treatable in the 1990-1991 annual report.

RECOMMENDATION 4: That the Company request an amendment to the ground rules when they are unable to meet the requirement of Table 1 of the ground rules.

RECOMMENDATION 5: That Company and Ministry officials take immediate action to resolve differences in negotiations for new ground rules.[1]

RECOMMENDATION 6: That the Company improve its records so that the forecasted harvest by area and resulting yields may be more accurately determined.

RECOMMENDATION 7: That in the event the Company should forecast harvest levels below 90 percent of those in the current plan, the Company should declare surplus, enter into third party agreements or request an undercut variation from the Minister.

RECOMMENDATION 8: That the Company indicate in their silvicultural records the class of NSR which was treated.

RECOMMENDATION 9: That the Ministry's required reporting forms remain the same during the five-year planning period.

RECOMMENDATION 10: That the Ministry recognize that the Company has met its obligations in the treatment of NSR land for the five-year period.

RECOMMENDATION 11: That the Company must improve the accuracy of road mapping and present the most accurate and current information available during the public involvement in the planning process.

RECOMMENDATION 12: That the Ministry provide the Company with all silvicultural records of their work conducted on the FMA.

RECOMMENDATION 13: That the Company and Ministry ensure agreement of figures prior to submission of annual reports so that the reports may be both on time and accurate.

RECOMMENDATION 14: That the Company review and routinely apply both the mandatory requirements and the good practices described in the Environmental Guidelines for Access Roads and Water Crossings (MNR 1988).

RECOMMENDATION 15: That the Company record and track all depletions from the commencement of the FMA and continue in the future on an annual basis.

RECOMMENDATION 16: That the Company and the Ministry improve communications in the area of FTG with respect to their responsibilities in the annual work schedule and annual report.

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[1] Ground rules have subsequently been agreed to.

FIVE-YEAR REVIEW
BOISE CASCADE CANADA LIMITED

PAKWASH FOREST
AGREEMENT 502100
1984-1989

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1. INTRODUCTION

1.1 PURPOSE OF THE REVIEW

The Ministry of Natural Resources and Boise Cascade Canada Limited signed a Forest Management Agreement (FMA) for the **PAKWASH FOREST**, located south west of Red Lake, on April 2, 1984. The purpose of the agreement was to provide for a continuous supply of forest products to the Company's mills at Kenora, Keewatin and Fort Frances, Ontario and to ensure that the forests of the **PAKWASH FOREST** are harvested and regenerated to produce successive crops of timber on a sustained yield basis.

This review of the first five consecutive years of the agreement was conducted on the **PAKWASH FOREST** to determine whether the obligations of the Company under the agreement have been satisfactorily performed and to recommend to the Minister of Natural Resources whether the remaining period of the agreement should be extended for a further term of five years.

1.2 THE REVIEW COMMITTEE

The review was carried out by a committee of three, engaged by the Ministry of Natural Resources for this purpose. The members were as follows:

- Mr. R. A. Baxter, Director of Operations,
  Northern Ontario, Ministry of Natural Resources
  (Retired), Committee Chairman,

- Dr. H. G. Cumming, Professor,
  Fish and Wildlife Management, School of Forestry,
  Lakehead University, and

- Mr. R. Clarke, Associate Professor,
  Silviculture and Management Planning, School of Forestry,
  Lakehead University.

1.3. TASKS OF THE REVIEW COMMITTEE

The review committee's assignment was to undertake a fair and objective review of Boise Cascade Canada Limited's performance on the **PAKWASH FOREST** during its first five-year term vis-a-vis its obligations under Forest Management Agreement 502100 and to make recommendations to the Minister of Natural Resources on the extension of the agreement's term according to the "Evergreen" section of the agreement (i.e. Section 15, paragraph 33).

The review was conducted by:

- examining the management, operating and annual plans, and the annual reports prepared by the Company with regard to their submission dates and their acceptability to the Ministry,

- inspecting the depletion, silvicultural and access road records for adequacy and for conformity with the management plans and the ground rules of the agreement,

- comparing the levels of harvest and treatment of not satisfactorily regenerated (NSR) lands outlined in the annual reports with the levels required by provisions of the agreement,

- selecting and field inspecting harvest cuts, silvicultural projects, and road construction typical of the techniques employed on the forest for conformity with the agreement holder's records and for field application of the ground rules,

- determining the degree to which other forest users and other forest values are accommodated in management planning and in field operations, and

- meeting with Company and Ministry district staff to identify problem areas and agreement concerns on the part of either party.

2. PROCEDURES AND FINDINGS

2.1 MANAGEMENT PLANNING

2.1.1 THE PREPARATION OF PLANS

Paragraphs 6(1), 10(1), 11(1), and 15(1) of the agreement require the Company to prepare management and operating plans and a series of annual plans. These plans must be prepared and submitted according to the timeframes specified in the agreement and according to the manual that has been approved by the Minister for this purpose.

The Forest Management Agreement was signed on April 2, 1984 and the management plan was due twelve months later. Extensions to this date were granted by the Ministry until after the five-year operating plan was approved. The plan was submitted May 9, 1986 and approved February 3, 1987.

The operating plan for the 1984 to 1989 period was due October 1, 1984. An extension was granted to January 1, 1985, and the plan was submitted January 2, 1985. Alterations were requested by the Ministry and the plan was resubmitted on June 14, 1985 and approved July 21, 1986.

The extended period for submitting the operating plan was partially due to the time required to resolve a difference of interpretation as to who was responsible for the preparation of the Modified Management Areas (MMAs), Company or Ministry, and to reach agreement with the Ministry as to the volume estimates in the plan. It was also due in part to the workload placed on the forestry staff of the Company to prepare three operating and three annual plans in the same period of time (i.e. for the **PAKWASH, LAKE OF THE WOODS**, and **EAST PATRICIA** FMAs).

The annual plan for the first year of the agreement (1984-1985) was prepared under licence 326700. The annual plans or work schedules for the next three years under review were late but were received within one week of the due date while the plan for the fifth year was received by the due date. However, they were all returned to the Company for alterations.

The committee noted that the annual work schedule for 1988-1989 did not contain a listing in the appendices of the stands which had been selected for depletion during the period of the schedule as required under Section 5.1.3. (Depletion Area) of the Timber Management Planning Manual for Crown Lands in Ontario. In discussions with both Company and District staff, it was their opinion that this listing is not required.

RECOMMENDATION: That the Ministry carry out a review of the requirement under Section 5.1.3 of the Timber Management Planning Manual for Crown Lands in Ontario, for the listing in the appendices of stands which have been selected for depletion during the period of the schedule, to determine if the listing should be continued as a requirement.

The Company had prepared a Timber Management Plan for the second five-year term for the Pakwash Agreement in accordance with the Timber Management Planning Manual for Crown Lands in Ontario. The new plan was submitted by the due date of October 1, 1988, returned to the Company for alterations, resubmitted and received approval by the Ministry on March 1, 1989.

In conclusion, although the Company was up to one week late meeting the due dates for three of the annual work schedules and all plans were returned for alterations, the Company met its management planning obligations.

2.1.2 PLAN IMPLEMENTATION

The agreement requires that the Company conduct its operations in accordance with the approved management, operating and annual plans. The accomplishments of the Company in silvicultural operations and road construction are summarized in Table 1.

The review committee examined the harvest cut and road construction records of the Company and found them to be generally in conformity with the areas allocated for harvest and the road locations specified in the management documents. Eight minor and five major deviations from the approved cutting areas were recorded. Amendments to the plans were requested and approved both in harvest allocation and road location. The level of regeneration, site preparation, harvest and access construction, during the five years was lower than planned while the level of tending was above planned as portrayed in Figure 1.

Reasons for the low level of harvest are provided in Section 2.3 and for the low level of road construction in Section 2.5 of this report. Regeneration levels did not meet the planned objectives due in part to the low level of harvesting, and in part to the limitation on available nursery stock.

TABLE 1

Summary of the Company's forest operations at Ministry expense for 1984-1989.

FMA EXPENDITURE AND
ACCOMPLISHMENT REPORT
FOR THE FIVE-YEAR TERM 1984-1989

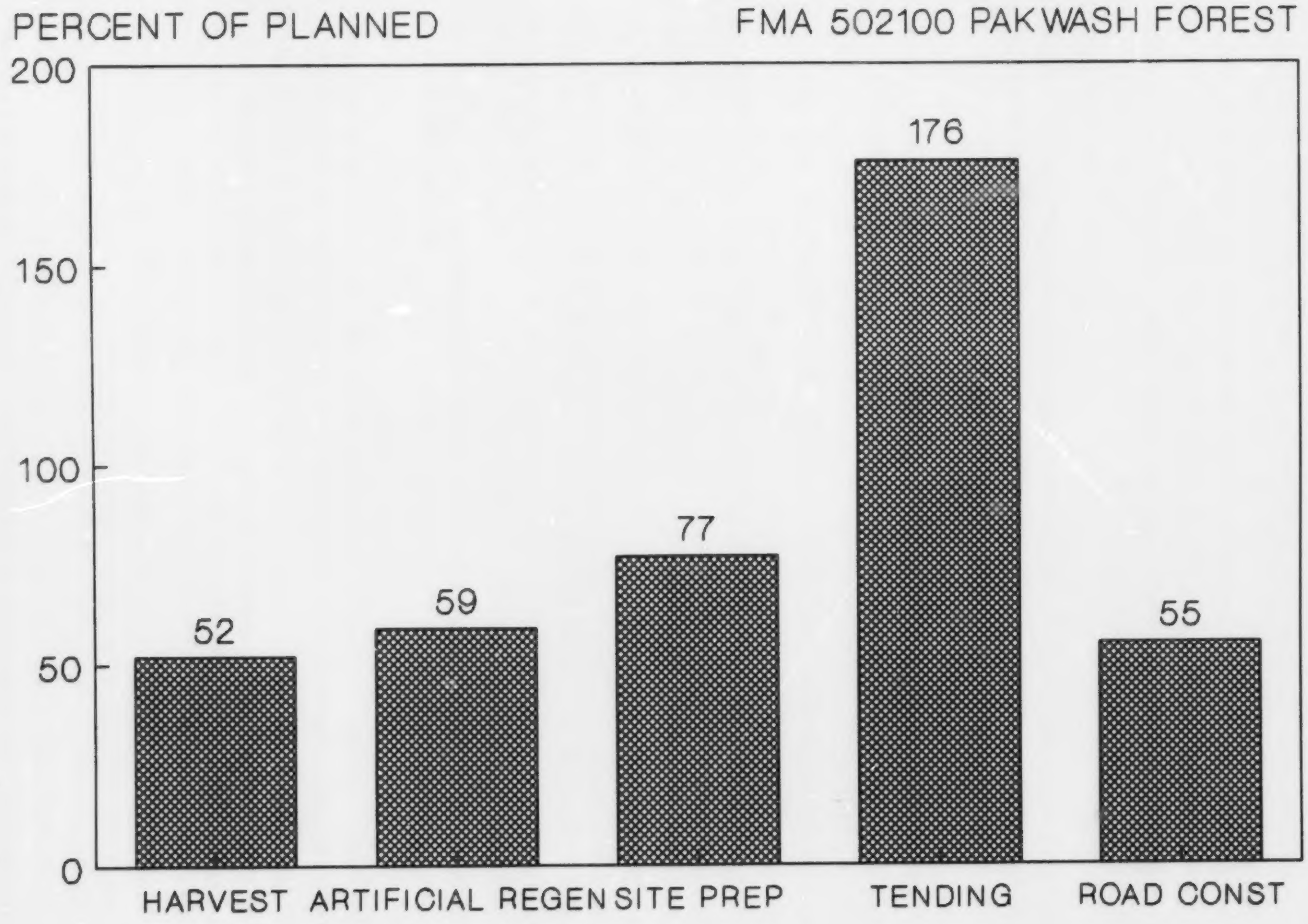
FMA 502100
PAKWASH FOREST
BOISE CASCADE CANADA LTD.

ACTIVITY	HECTARES	DOLLARS
HARVEST CUT	12,944	
NATURAL REGENERATION	--	--
ARTIFICIAL REGENERATION		
PLANTING BAREROOT	917	
PLANTING CONTAINER	1,550	
SEEDING DIRECT	2,208	
SEEDING WITH CERKON	332	
TOTAL ARTIFICIAL	5,007	
TOTAL REGENERATION	2,265	
TENDING		
CHEMICAL CLEANING/AERIAL	3,714	
CHEMICAL CLEANING/GROUND	--	
OTHER TENDING	--	
TOTAL TENDING	3,714	
SITE PREPARATION		
MECHANICAL	7,678	
CHEMICAL	--	
PRESCRIBED BURN	--	
TOTAL SITE PREPARATION	7,678	
MNR SILVICULTURAL PAYMENTS		$ 2,960,473
ROAD CONSTRUCTION	**KILOMETRES**	**DOLLARS**
PRIMARY	199.5	$ 9,009,000
SECONDARY	107.6	$ 1,549,300
TOTAL CONSTRUCTION	307.1	$10,558,300
ROAD MAINTENANCE	749.1	$ 356,500
MNR TOTAL ROAD PAYMENTS		$10,914,800
TOTAL PAYMENTS		$13,875,273

Note: This table represents activities carried out by the Company, and the associated costs to MNR. As part of the MNR obligation under the Agreement, Forest Management Activities were also conducted by MNR, at additional expense.

Data Source: Audit Sections 4.1.1 to 4.4.2 supplied by MNR.

FIGURE 1: COMPARISON OF OPERATING PLAN VS ACTUAL



2.2 THE GROUND RULES

2.2.1 KNOWLEDGE AND FAMILIARITY WITH THE GROUND RULES AND THE AGREEMENT

Based on discussions held with the Company, both in the office and field, it was apparent to the review committee that the Company staff were knowledgeable and familiar with the provisions of the ground rules and the agreement.

2.2.2 CONFORMITY OF HARVEST AND SILVICULTURAL OPERATIONS WITH THE GROUND RULES

The committee's examinations of silvicultural records, its field inspections and its discussions with the designated Crown representative (DCR) all confirmed that harvesting and silvicultural operations have been conducted in accordance with the ground rules.

The ground rules permit the classification of non-treatable sites by mutual agreement. Any area may be classed as non-treatable where extremes in topography, shallowness of soil, excessive rock, poor drainage or inaccessibility make it uneconomic or impractical to treat. Non-treatable areas either allocated for harvesting in the operating plan or depleted for other reasons during the operating plan period were to be included in the depletion section of the annual report. To date no areas have been declared as non-treatable on the **PAKWASH FOREST** despite the fact that 12,944 hectares (ha) have been harvested.

The review committee is concerned that non-treatable areas may have been overlooked by both parties and that a failure to classify them will result in disputed retreatment obligations.

RECOMMENDATION: That the Company and the Ministry jointly review the treatable status of lands cut over during this five-year term for which Table 1 of the ground rules specifies treatment but which have received no treatment or plans for treatment, and that the Company report any areas mutually agreed to be non-treatable in the 1990-1991 annual report.

Paragraph 14(3) of the agreement allows for the ground rules to be amended by mutual agreement provided that the amendments are consistent with the management plan and operating plan. The committee noted that in the annual work plans, the Company stated that the number of trees planted per hectare may be less than those stated in Table 1 of the ground rules. However, they did not request an amendment to the ground rules.

RECOMMENDATION: That the Company request an amendment to the ground rules when they are unable to meet the requirement of Table 1 of the ground rules.

2.2.3 CONFORMITY OF INVOICING PRACTICES WITH THE GROUND RULES

The invoicing procedures of the Company were found to be in conformity with those specified in the ground rules. The Company and Ministry representatives reconciled any differences in hectares treated, number of trees planted or kilometres (km) of road constructed or maintained, before submission of invoices.

2.2.4 THE PREPARATION OF NEW GROUND RULES

The Forest Management Agreement with the Company requires both parties to commence the preparation of new ground rules for the next five-year term at least eight months prior to the expiry of the old ground rules, and to agree upon those new ground rules on or before the expiry date of March 31, 1989. The committee notes that the preparation of the new ground rules commenced prior to the required date, but at the time of the five-year review, August 21,1989, the ground rules had not been agreed to by the Company and MNR District.

Under paragraphs 14(2) and 33(a)(b) of the agreement, ground rules for the next term are to be agreed to before extension of the agreement for a further five-year term.

RECOMMENDATION: That Company and Ministry officials take immediate action to resolve differences in negotiations for new ground rules.[1]

2.3. HARVEST LEVELS, ALLOWABLE DEPLETION, YIELDS AND WOOD FLOW

According to paragraph 20(1) of the agreement, the Company has agreed to maintain its harvest on the **PAKWASH FOREST** at a level between 90% and 110% of the calculated allowable depletion (allowable cut) for each working group. The Company may request the Minister to authorize variations to those levels specified in the agreement.

Paragraphs 20(3) and 20(4) of the agreement provide for either a remedy or liquidated damages in the event of an overcut or undercut, respectively, on the area under agreement. The agreement holder may avoid liquidated damages through the declaration of timber surplus to its needs in an approved management plan, however, liquidated damages do not apply in the first five-year term of a Forest Management Agreement.

Table 2 provides information in hectares by working group for the maximum allowable depletion (MAD), forecasted harvest, actual harvest and the percentage deficit between actual and forecasted harvest.

The Company declared surpluses in the balsam and poplar working groups of 1,325 and 7,740 hectares respectively (Figure 2). Even with these declared surpluses the Company was unable to meet its forecasted harvest commitment by area in any of the working groups.

Table 3 provides information regarding the forecasted volume and actual volumes in cubic metres by individual species. The deficit by volume is 24 percent for pine and 5 percent for spruce and balsam. It would appear that the Company harvested near the forecasted volumes by species although the split between spruce and balsam is not known.

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[1] Ground rules have subsequently been agreed to.

TABLE 2: **PAKWASH FOREST FMA 502100**

Comparison in hectares of the maximum allowable depletion, forecasted harvest from the operating plan and actual harvest levels by working group for the period 1984-1989 and the percentage difference between the forecasted harvest and actual harvest.

WORKING GROUP	MAD	FORECASTED HARVEST	ACTUAL HARVEST	PERCENT ACTUAL VS FORECASTED
PINE	9505	9505	5288	56
SPRUCE	9315	9315	583	63
BALSAM	1925	600	177	30
POPLAR	13175	5435	1649	30
TOTAL	33920	24855	12944	52

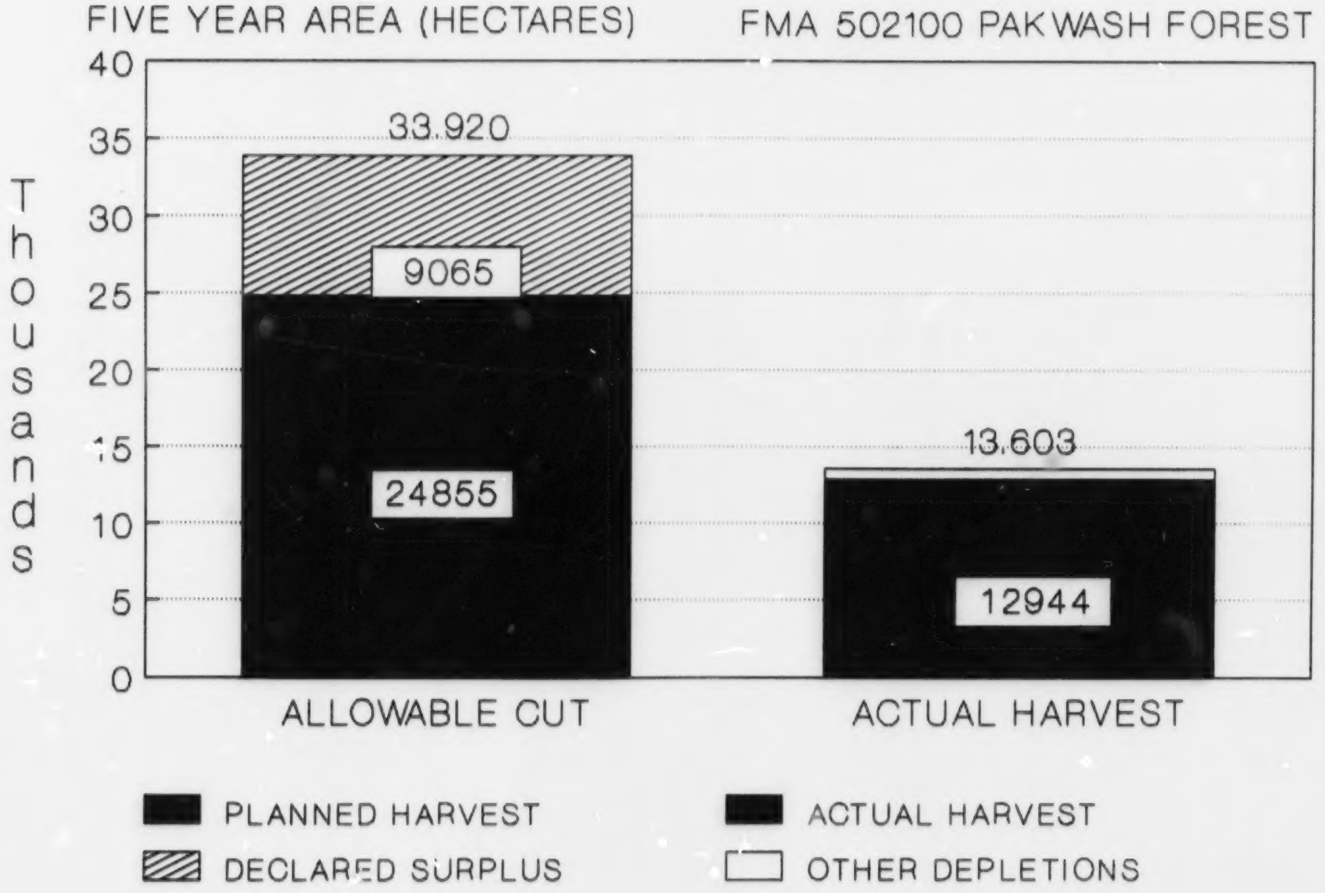
TABLE 3: **PAKWASH FOREST FMA 502100**

Comparison of forecasted and actual volumes in cubic metres (m3) by species and the percentage difference.

SPECIES	FORECASTED M^3	ACTUAL M^3	PERCENT ACTUAL VS FORECASTED
PINE	774790	586,459	76
SPRUCE	840120	*837,023	95
BALSAM	44160		
POPLAR	391205	2,853	1

NOTE: *Spruce and Balsam Combined.

FIGURE 2: COMPARISON OF ALLOWABLE DEPLETION AND HARVEST



The Company indicated in the Operating Plan that neither the Company nor the Ministry kept depletion records prior to 1984, making it difficult to predict yields for the period 1984-1989.

The audit team was supplied with the following values:

Actual Yields	1979-1984	117.4 m^3 /ha
Predicted Yields	1984-1989	66.7 m^3 /ha
Actual Yields	1984-1989	109.9 m^3 /ha

The predicted yields for 1984-1989 were obtained from the operational cruise (OPC) and the forest resources inventory (FRI). If the actual yields for 1979-1984 were available this information should have been utilized by the Company during the preparation of the Operating Plan. It would have provided better yield estimates than would the OPC/FRI.

This underestimate of yield provided a gross overestimate in the area required to produce the forecasted mill requirements from this FMA. Close attention should be made in recording yields of species by working groups as well as recognizing the influence that depletions other than harvest such as MMAs, by-pass and roads have on the future MAD. The Company utilizes a small proportion of balsam and very little poplar. The Company, through the timber management planning process, will identify the utilization of the available wood supply.

RECOMMENDATION: That the Company improve its records so that the forecasted harvest by area and resulting yields may be more accurately determined.

RECOMMENDATION: That in the event the Company should forecast harvest levels below 90 percent of those in the current plan, the Company should declare surplus, enter into third party agreements or request an undercut variation from the Minister.

2.4 NSR OBLIGATIONS

The Company was obligated to regenerate 57 hectares of NSR 3 land (Figure 3). The Company during the first five years has site prepared 610 hectares, regenerated 555 hectares and tended 2,227 hectares of NSR land.

The Company did not record the class of NSR treated in their silvicultural records nor does the Ministry's Annual Report forms require differentiation. Further, the more recently required Ministry forms do not differentiate between NSR and barren and scattered (B&S).

It is the audit team's opinion that the Company has surpassed its obligations in the NSR classed lands.

RECOMMENDATION: That the Company indicate in their silvicultural records the class of NSR which was treated.

RECOMMENDATION: That the Ministry's required reporting forms remain the same during the five-year planning period.

RECOMMENDATION: That the Ministry recognize that the Company has met its obligation in the treatment of NSR lands for the twenty-year period.

2.5 ROAD CONSTRUCTION AND MAINTENANCE

Paragraph 31 of the agreement provides for the Minister to reimburse the Company, subject to a maximum amount per kilometre, for the construction, reconstruction, and maintenance of forest access roads on the agreement area. To be eligible for payment, roads must be included in approved annual plans and constructed according to the standards specified in Schedule "E" of the agreement.

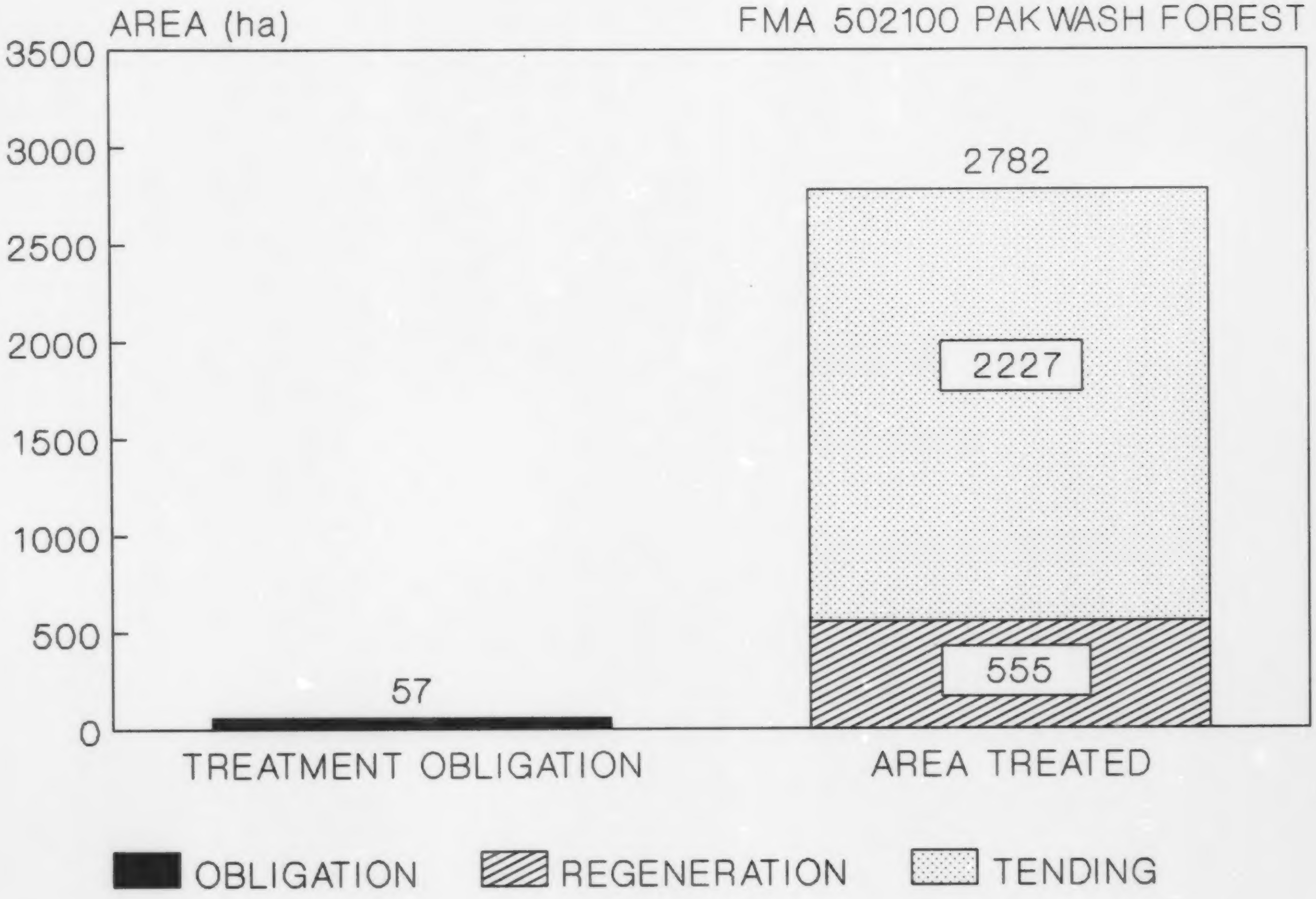
Only 110 km of primary roads and 56 km of secondary roads existed on the **PAKWASH FOREST** prior to the signing of the FMA. These roads extended mainly from Highway 105, and accessed only the north-east corner of the agreement area. Therefore, access to older stands required a major programme of road building. During the five-year period, the Company nearly tripled the road system in the area by building 200 km of primary road and 91 km of secondary road. This is a laudable achievement.

On the **PAKWASH FOREST**, all roads are built by contractors. Roads are inspected at intervals by the Company road engineer for partial payments to the contractor. Roads are then examined jointly by a Ministry and a Company representative to verify standards and measure lengths. If roads are not up to standards they are redone before invoicing. This procedure and the generally higher road standards of the Company ensured that in no case during the period under review was an invoice refused because roads were substandard.

Seventy eight percent of the planned primary roads were built. However, only about one third of the planned secondary roads were actually constructed, therefore, 55% of the planned roads were actually constructed (Figure 1). The reason given by the Company was that when funding by the Ministry was reduced, the Ministry specified that primary roads were to take precedence. This priority was appropriate for this area to provide a road network for the first time, and to facilitate the Ministry and Company policy of accessing oldest stands first. Due to the shortfall in secondary road construction, fewer roads than expected required maintenance, with the result that maintenance amounted to only 69% of expected.

Many amendments for road location were required during the period under review. Some of these were commendable in that they accommodated concerns of other users. Two amendments were responsible for major differences in planned versus actual figures. One was made to accommodate other users and the other was due to a rocky area that had not been anticipated during the planning stage. Numerous other amendments were made for similar reasons.

FIGURE 3: COMPARISON OF NSR TREATMENT OBLIGATIONS AND NSR TREATMENT 1984-89



RECOMMENDATION: That the Company improve the field inspection of prospective road locations prior to submitting plans so that the number of subsequent amendments will be reduced.

2.6 COMPANY RECORDS

Silvicultural treatments on the **PAKWASH FOREST** are colour coded on mylar maps. Map prints are compiled in loose-leaf books where again colour coded outlined areas indicate annual projects within named blocks. Record sheets, also retained in the books with the maps, provide additional information about the projects, such as, areas treated. Team members, using a Pneumonic Graphic Calculator, showed that a planting area and a seeding area measured close to the areas recorded, and that a site preparation area, that would have been used for invoicing, was exact. The record system permits maintenance of accurate records of silvicultural work. The team had some reservations about the use of names for blocks when the list of treated areas becomes long. They found that treatments carried out in different years on the same areas were not always as easy to track as they might have been. A numerical system would perhaps be more practical, especially in view of the Company's move to a Geographic Information System(GIS).

The Company has not received the records of the Ministry's pre and post FMA silvicultural activities conducted on the agreement area. These records are necessary for effective management.

RECOMMENDATION: That the Ministry provide the Company with all silvicultural records of their work conducted on the FMA.

2.7 ANNUAL REPORTS

Paragraph 38 of the agreement requires that the holder prepare an annual report in accordance with the Forest Management Manual summarizing certain aspects of operations during the preceding year.

The committee found that the annual reports were submitted on time, but that several additional months passed before all corrections and changes were completed. Site preparation records were correct in annual reports for two examined instances. Reported primary and secondary road construction accurately reflected invoice totals for the year in one investigated instance. Thus the annual reports appeared to be accurate after all corrections had been completed.

RECOMMENDATION: That the Company and Ministry ensure agreement of figures prior to submission of annual reports so that the reports may be both on time and accurate.

2.8 INTEGRATION WITH OTHER FOREST USERS

Section 14 of the ground rules, entitled Modified Management Areas, explains how the Ministry, in consultation with the Company, will identify and delineate on FRI Forest Stand Maps, during the preparation of each Five-Year Operating Plan, areas to be managed to meet objectives other than those of wood fibre production. It states that some form of harvesting and regeneration is intended in these areas where possible, and three kinds of MMAs are specified:

(i) Areas that the Company will be allowed to harvest at the time of the initial cut.

(ii) Areas that the Company will be allowed to harvest at a future date (i.e. leave areas).

(iii) Areas that the Company will not be allowed to harvest (i.e. no harvest areas).

Neither the Management Plan nor the Operating Plan explained the purpose of these MMAs or their prescriptions. Therefore, it was impossible to determine from these plans how the Company intended to implement the requirements. Their omission from the planning documents was due to several factors. Despite FMAs in other parts of Ontario having been negotiated three years prior to this signing, there remained confusion on the part of the Company, as mentioned in their Operating Plan, about which aspects of establishing these MMAs were to be Company responsibilities and which were those of the Ministry. The Company was able to produce files containing hand-filled forms from the Ministry providing purposes and prescriptions for MMAs, but these had not been formalized nor included in the Operating Plan. The committee believes that good planning principles require such details to be included in this public document. The new Timber Planning Manual ensures that such confusion will not continue during the second five years.

As noted in Section 2.5, the signing of this agreement initiated road building into what had been essentially a roadless wilderness. The main use of the area was for tourism. Ten major outfitting establishments catered to people desiring wilderness fishing. In doing so they established outpost camps on most of the larger lakes in the area. Thus the location of a new road network was a matter of great concern. Critical for all subsequent construction was a major crossing of the English River. Considerations concerning where to cross were begun by the Company in the early 1970s and studies related to this crossing continued in 1975-76, 1976-78, and 1981. After consideration of many options, the bridge was finally built in 1984. From this experience, the Company learned much about road location. During their subsequent road building program, they repeatedly presented road location options to the public for comment, explaining the advantages and disadvantages of each option. During this process tourist operators, trappers, and others frequently came to the Company offices with concerns about road locations. Wherever possible, these concerns were addressed. The Company policy of public information and consultation before location and construction was successful in addressing the concerns of nearly all tourist outfitters. The whole process provides an outstanding example of the way in which Company, Ministry, and public should interact to ensure optimum integration of the resource uses within an area. In preparing the second five-year plan the Company took an even more proactive stance by approaching each tourist operator with proposed plans and asking for comments. The Company is to be commended for its enlightened approach to this potentially vexatious problem.

The major water crossings were also exceptionally well handled. The Company policy of hiring engineering firms to consult with the Ministry and propose solutions to difficult on-site problems resulted in crossings that are innovative and effective. Unfortunately, the potentially negative effects of poorly installed water crossings are not lessened by being on smaller streams or roads, and not all of the smaller crossings were as carefully carried out. Most culverts were suitably placed, and special care had been taken with those for which the Ministry had defined specific fishery concerns. During field inspections, some culverts appeared to be sited too high with resultant ponding on the upstream side, and possible blocking of fish movements. The Ministry indicated concern about siltation while placing culverts during road construction.

RECOMMENDATION: That the Company address the specific water crossing problems that were identified by the Ministry.

RECOMMENDATION: That the Company review and routinely apply not only the mandatory requirements but also the good practices described in the Environmental Guidelines for Access Roads and Water Crossings (MNR 1988).

On the **PAKWASH FOREST,** clearcut size in this forest was not so large as to negate possible benefits to moose, and MMAs assisted in producing the kind of interspersion of cover types that is most beneficial for these animals. Eagle nest sites, and those of similar birds, had been well documented by the Ministry. Although the Company did not have any general map to show nest site locations, these sites were recorded on the mylars used for other records. Actual treatments of the nest sites were not examined.

3. MAINTENANCE AND PRODUCTIVITY

Table 2 shows the MAD which was calculated for the **PAKWASH FOREST** for the five-year period 1984-1989. The levels of harvest are below the minimum allowed for all working groups.

The annual reports indicate that 7,081 hectares (MNR 2,074; Company 5,007) have received artificial regeneration treatment. A total of 9,512 hectares (MNR 1,834; Company 7,678) have been site prepared with an additional 3,714 hectares (MNR 0; Company 3,714) having been tended. These figures are for the pine and spruce working groups. No areas were identified for natural regeneration in the pine, spruce or poplar working groups. The total renewal during the five-year period represents approximately 64 percent of the harvested area for the pine and spruce working groups. A total of 86 percent of these two working groups have been site prepared for renewal treatments.

The Company achieved 55 percent of their planned renewal of recent cutover and indicated their desire to approach full renewal of the harvested pine and spruce working groups.

The Company's records do not identify or record non-harvest depletions such as by-pass, no return MMAs and inoperable areas. Failure to classify these areas could lead to an inflated MAD in the future.

The FMA does not require the carrying out of stocking assessments or regeneration surveys during the first five-year period. It should be noted that information on stocking, density and growth is not only necessary to measure the level of success of any regeneration program but also as a predictor for future productivity. The Company intends to institute this during the second five-year period of the agreement.

The Company has requested free-to-grow (FTG) assessments in their annual work schedule (AWS) for treated and untreated areas. There seems to be some confusion between the Company and the Ministry over the exact areas which have been assessed and identified as FTG. There is concern by both agencies over the lack of sufficient funds to conduct these surveys as the amount of area increases.

RECOMMENDATION: That the Company record and track all depletions back to the commencement of the FMA and continue in the future on an annual basis.

RECOMMENDATION: That the Company and the Ministry improve communications in the area of their FTG with respect to their responsibilities in the annual work schedule and annual report.

4. COMPANY CONCERNS

The Company was provided the opportunity to express any concerns that it might have with regards to FMA 502100 or with regard to the Ministry's administration of the agreement. Senior management of Boise Cascade Canada Limited, though generally satisfied with the workings of the FMA, expressed concerns, as follows:

- The FMA program should be reviewed and analyzed on a long term basis to determine the appropriate levels of commitment and funding.

- There appears to be insufficient nursery stock available on a regional basis to meet the current or future requirements for both FMA and Crown Units.

- If there are sufficient funds available, FMA holders should be given the flexibility to determine which of the eligible roads are built and invoiced.

- It is becoming increasingly difficult to predict what the level of FMA funding will be and what new restrictions will be placed on the available funds. The distribution and notification dates are getting later and later each year to the point where it is interfering with the planning and execution of our program.

- The submission date for the Annual Work Schedule for FMA units should be changed from December 1 to January 31 to be consistent with Crown and Company management units.

- Black spruce seedlings grown in small Spencer Lemaire - Ferdinand Book containers are not large enough to withstand the rapid growth of competition on our productive sites.

- As the FMA program evolves, the role of the DCR and support staff should be reviewed and modified to reflect the changes in responsibility.

- We have experienced an extremely high turnover rate of OMNR personnel at the DCR and forest supervisor positions. This makes it hard to develop good working relationships at the local or field levels.

- The Crown management units should be reviewed and analyzed on a long term basis to determine the appropriate levels of commitment and funding. The management practices on these units should be audited similar to FMAs by independent auditors.

5. CONCLUSIONS AND RECOMMENDATIONS

The review committee was satisfied that the obligations of the Company under the agreement have been satisfactorily performed by the Company during the five-year term under review. The committee was impressed with the organization and intensity of silvicultural effort by the Company and the commitment to the success of regenerating the **PAKWASH FOREST**.

RECOMMENDATION 1: That the Ministry extend the remaining period of FMA 502100 by a further term of five consecutive years to March 31, 2009.

RECOMMENDATION 2: That the Ministry carry out a review of the requirement under Section 5.1.3. of the Timber Management Planning Manual for Crown Lands in Ontario, for the listing in the appendices of stands which have been selected for depletion during the period of the schedule, to determine if the listing should be continued as a requirement.

RECOMMENDATION 3: That the Company and the Ministry jointly review the treatable status of lands cut over during this five-year term for which Table 1 of the ground rules specifies treatment but which have received no treatment or plans for treatment, and that the Company report any areas mutually agreed to be non-treatable in the 1990-1991 annual report.

RECOMMENDATION 4: That the Company request an amendment to the ground rules when they are unable to meet the requirement of Table 1 of the ground rules.

RECOMMENDATION 5: That Company and Ministry officials take immediate action to resolve differences in negotiations for new ground rules.[1]

RECOMMENDATION 6: That the Company improve its records so that the forecasted harvest by area and resulting yields may be more accurately determined.

RECOMMENDATION 7: That in the event the Company should forecast harvest levels below 90 percent of those in the current plan, the Company should declare surplus, enter into third party agreements or request an undercut variation from the Minister.

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[1] Ground rules have subsequently been agreed to.

RECOMMENDATION 8: That the Company indicate in their silvicultural records the class of NSR which was treated.

RECOMMENDATION 9: That the Ministry's required reporting forms remain the same during the five-year planning period.

RECOMMENDATION 10: That the Ministry recognize that the Company has met its obligations in the treatment of NSR lands for the twenty-year period.

RECOMMENDATION 11: That the Company improve the field inspection of prospective road locations prior to submitting plans so that the number of subsequent amendments will be reduced.

RECOMMENDATION 12: That the Ministry provide the Company with all silvicultural records of their work conducted on the FMA.

RECOMMENDATION 13: That the Company and Ministry ensure agreement of figures prior to submission of Annual Reports so that the reports may be both on time and accurate.

RECOMMENDATION 14: That the Company address the specific water crossing problems that were identified by the Ministry.

RECOMMENDATION 15: That the Company review and routinely apply not only the mandatory requirements but also the good practices described in the Environmental Guidelines for Access Roads and Water Crossings (MNR 1988).

RECOMMENDATION 16: That the Company record and track all depletions from the commencement of the FMA and continue in the future on an annual basis.

RECOMMENDATION 17: That the Company and the Ministry improve communications in the area of FTG with respect to their responsibilities in the annual work schedule and annual report.

FIVE-YEAR REVIEW
DUBREUIL BROTHERS LIMITED
(NOW DUBREUIL FOREST PRODUCTS LIMITED)

MAGPIE FOREST
AGREEMENT 502200
1984 - 1989

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1. INTRODUCTION

1.1 PURPOSE OF THE REVIEW

The Minister of Natural Resources and Dubreuil Brothers Limited signed a Forest Management Agreement (FMA) for the **MAGPIE FOREST,** located north of Wawa in the territorial districts of Algoma and Sudbury, on February 24, 1984. The purpose of this agreement was to provide for a continuous supply of forest products for the Company's sawmill at Dubreuilville and to ensure that the **MAGPIE FOREST** is harvested and regenerated to produce successive crops of timber on a sustained yield basis.

On April 17, 1989 the Minister of Natural Resources approved the transfer of the **MAGPIE FOREST** from Dubreuil Brothers Limited to Dubreuil Forest Products Limited. However, Dubreuil Brothers Limited were fully responsible for the five-year term under review with the purpose of providing a continuous supply of forest products to the plant in Dubreuilville and will hereafter be referred to as the Company. Dubreuil Forest Products Limited have assumed responsibility for the FMA and will hereafter be referred to as the new Company.

This review of the first five consecutive years of the agreement was conducted on the **MAGPIE FOREST** to determine whether the obligations of the Company under the agreement have been satisfactorily performed and to recommend to the Minister of Natural Resources whether the remaining period of the agreement should be extended for a further term of five years.

1.2 THE REVIEW COMMITTEE

The review was carried out by a committee of three engaged by the Ministry of Natural Resources for this purpose. The three committee members were:

- Mr. G.W. Bell, R.P.F.,
  Vice-President, Woodlands (Retired),
  Spruce Falls Power and Paper Company Limited,
  Committee Chairman

- Mr. C.J. Heeney, B.Sc.F., Dip. R.M.,
  Supervisor, Forest Production and Control (Retired),
  Ministry of Natural Resources

- Dr. K.J. Szuba, B.Sc.F., Ph.D.
  Consulting Biologist

1.3 TASKS OF THE REVIEW COMMITTEE

The review committee's assignment was to undertake a fair and objective review of Dubreuil Brothers Limited performance on the **MAGPIE FOREST** during its first five-year term vis-a-vis its obligations under Forest Management Agreement 502200 and to make recommendations to the Minister of Natural Resources on the extension of the agreement's term according to the "Evergreen" section of the agreement (i.e. Section 15, paragraph 33).

The review was conducted by:

- examining the management, operating and annual plans and the annual reports prepared by the company with regard to their submission dates and their acceptability to the Ministry,
- inspecting the depletion, silvicultural and access road records for adequacy and for conformity with the management plans and the ground rules of the agreement,
- comparing the levels of harvest and treatment of not satisfactorily regenerated (NSR) lands outlined in the annual reports with the levels required by provisions of the agreement,
- selecting and field inspecting harvest cuts, silvicultural projects, and road construction typical of the techniques employed in the forest for conformity with the agreement holder's records and for field application of the ground rules,
- determining the degree to which other forest users and other forest values were accommodated in management planning and in field operations, and
- meeting with Company and Ministry district staff to identify problem areas and agreement concerns on the part of either party.

2. PROCEDURES AND FINDINGS

2.1 MANAGEMENT PLANNING

2.1.1 THE PREPARATION OF PLANS

Paragraphs 6(1), 10(1), 11(1), and 15(1) of the agreement require the Company to prepare management and operating plans and a series of annual plans. These plans must be prepared and submitted to the Ministry of Natural Resources according to the time frames specified in the agreement and according to the manual that has been approved by the Minister for this purpose.

The Forest Management Agreement for the **MAGPIE FOREST** was signed on February 24, 1984. The management plan was due February 24, 1985 and an extension requested by the Company was granted to March 29, 1985. The plan was submitted on the extended due date, subsequently altered at the request of the Ministry, and received final approval on February 10, 1986.

The operating plan for the first five-year period (1984-1989) was due on August 24, 1984. A one month extension was requested by the Company and granted by the Ministry. When this due date passed, a meeting between the Company and the Ministry was held and a final deadline of

November 15, 1984 was agreed upon. The plan was submitted on November 6, 1984, reviewed by the Ministry, and approved on February 28, 1985.

In the preparation of annual plans, the Company had some difficulty meeting due dates in the initial years. In the final three years of the planning period, plans were prepared, submitted and approved on time with one minor exception.

The new Timber Management Plan (TMP) for the **MAGPIE FOREST** for the second five-year term (1989-1994) was prepared in accordance with the Timber Management Planning Manual for Crown Lands in Ontario. The plan was prepared on time, September 30, 1988, reviewed, altered, and received final approval on February 22, 1989.

In conclusion, although the Company had some difficulty in meeting due dates for initial plans, they have met all their recent management planning obligations.

2.1.2 PLAN IMPLEMENTATION

The agreement requires that the Company conduct its operations in accordance with the approved management, operating and annual plans. The accomplishments of the Company in silvicultural operations and road construction are shown in Table 1.

The review committee has examined Company planning documents and performance records supplemented by ground inspections for harvest cut, road construction and silvicultural operations. The comparison of actual and planned levels is portrayed in Figure 1.

This figure provides a very favourable impression of achievements due to the low silvicultural targets established for the first planning period. For example, the 4866 ha's of forest regeneration shown in Table 2 is 87.5% of the regeneration planned. However, only 28% of the total area harvested, or only 40% of the conifer working group harvested during the same period was regenerated. The committee has identified this problem here to ensure that future planning objectives more closely reflect the total silvicultural requirement to manage the forest.

The harvest cut and road construction records of the Company generally conform to the area allocated for harvest and the road locations specified in the management documents and approved amendments. The Company has done a commendable job in road location. In most cases locations shown in the operating and annual plans were determined only by photo interpretation. This, combined with rocky terrain and limited gravel deposits on the **MAGPIE FOREST**, meant that final alignment of roads was not specified until the Company applied for work permits. Despite the approximate nature of planned locations, the committee found that actual locations plotted on maps from aerial photography of the completed roads conformed very well to those shown in the plans. Two minor deviations from approved harvest areas which resulted in trespass charges under the Crown Timber Act were noted.

TABLE 1

Summary of the Company's forest operations at Ministry expense for 1984-89

FMA EXPENDITURE AND
ACCOMPLISHMENT REPORT
FOR THE FIVE-YEAR TERM 1984-1989

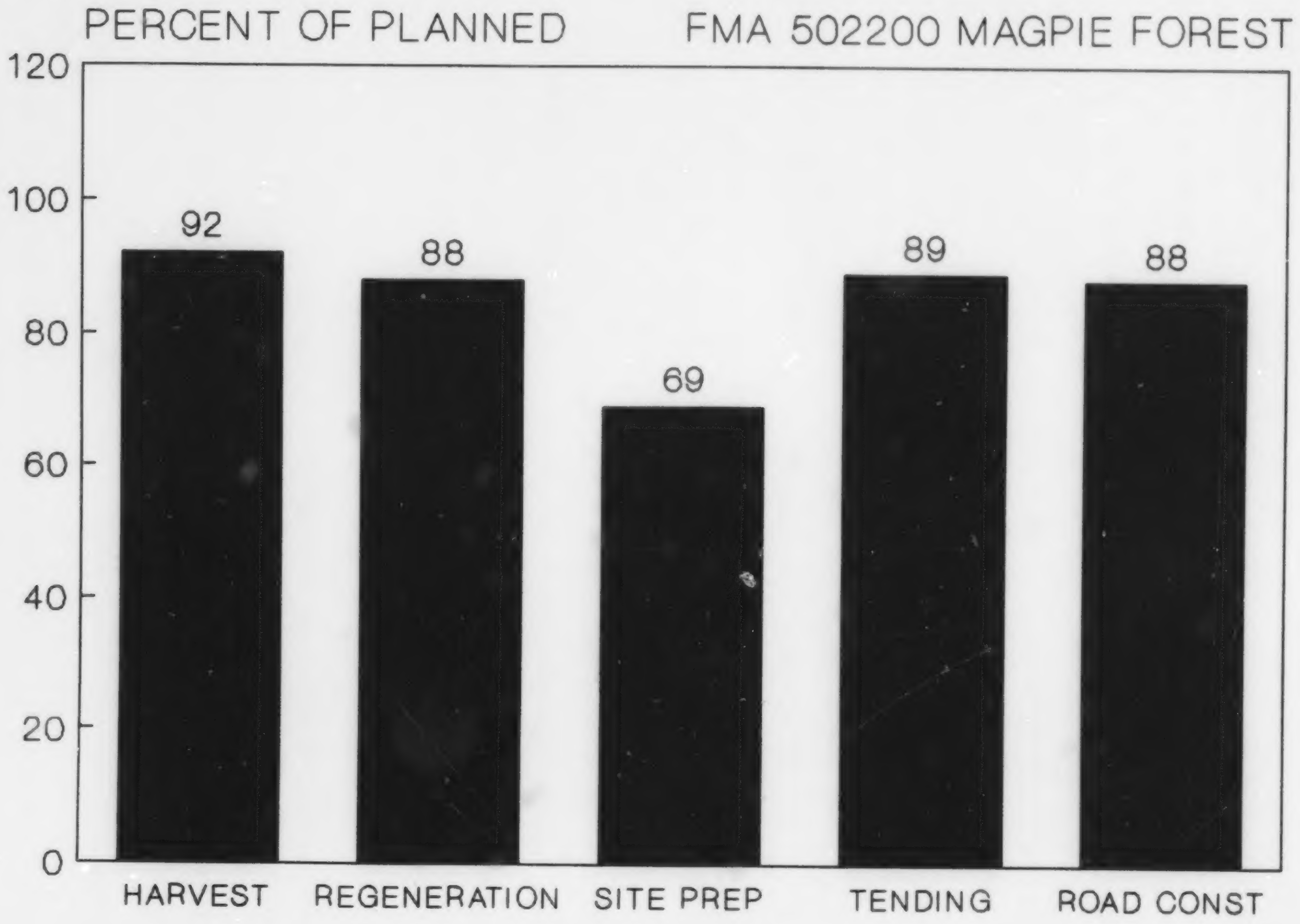
FMA 502200
MAGPIE FOREST
DUBREUIL BROTHERS LTD.

ACTIVITY	HECTARES	DOLLARS
HARVEST CUT	17,386	
NATURAL REGENERATION	293	
ARTIFICIAL REGENERATION		
PLANTING CONTAINER	1,972	
TOTAL ARTIFICIAL	1,972	
TOTAL REGENERATION	2,265	
TENDING		
CHEMICAL	1,276	
TOTAL TENDING	1,276	
SITE PREPARATION		
MECHANICAL	2,243	
CHEMICAL	414	
TOTAL SITE PREPARATION	2,657	
MNR SILVICULTURAL PAYMENTS		$ 1,144,359
ROAD CONSTRUCTION	**KILOMETRES**	**DOLLARS**
PRIMARY	114.1	--
SECONDARY	158.0	
TOTAL CONSTRUCTION	272.1	$ 7,584,000
ROAD MAINTENANCE	492.5	$ 231,200
MNR TOTAL ROAD PAYMENTS		$ 7,815,200
AIRSTRIP CONSTRUCTION (2 airstrips, 1.6 km)		$ 71,000
TOTAL PAYMENTS		$ 9,030,559

Note: This table represents activities carried out by the Company, and the associated costs to MNR. As part of the MNR obligation under the Agreement, Forest Management Activities were also conducted by MNR, at additional expense.

Data Source: 5-year summaries. Natural regeneration revised to 293 ha as in Table 4.1.3.

FIGURE 1: COMPARISON OF OPERATING PLAN vs ACTUAL



There were three major amendments and 17 minor and administrative amendments to the operating plan involving the allocation of stands for harvest, roads, and Modified Management Areas[1] (MMAs). The amendments were prompted by a reduction in the rotation age of spruce from 110 years to 100 years, more in line with other plans in this area, the removal of restrictions on the harvesting of conifer from stands in the poplar working group, and the construction of a poplar chip mill at the Company's plant in Dubreuilville.

Table 2 **MAGPIE FOREST FMA 502200**

Comparison, in hectares, of the 1984-1989 Maximum Allowable Depletion (MAD), Total Depletion, Harvest and Regeneration Activities and the 1989-1994 MAD. (Ministry phase-out operations included in regeneration total).

WORKING GROUP	1984-89 MAXIMUM ALLOWABLE DEPLETION	TOTAL DEPLETION	HARVEST CUT	REGEN TOTAL	1989-94 MAXIMUM ALLOWABLE DEPLETION
Spruce	6474	6391	5087		6506
Jack Pine	7845	7876	6890		7113
Poplar	18070	3850	3243		12971
White Birch	6950	2495	2166		7283
TOTAL	39339	20612	17386	4866	33873

Levels of achievement for both harvest cut and road construction were below those planned. The reasons will be addressed in Sections 2.3 and 2.5 of this report.

Forest renewal was 12% short of the planned objective, largely due to a shortfall in areas treated for natural regeneration. Tree planting was on target. Site preparation was 31% below target. This was due to a sharp reduction in prescribed burning and a planned reduction in mechanical site preparation for both natural and artificial regeneration to allow more time for the completion of harvest operations before beginning site preparation.

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[1] Modified Management Areas have since been replaced by the "Areas of Concern" (AOC) planning process.

In conclusion, Figure 1 shows that actual achievement was close to planned achievement for the planning period. However, the concern of the committee is the small area of regeneration treatment compared to the large area of cutover.

More detail on this and the accomplishments of the Company will be found in Sections 2.2.2 **CONFORMITY OF HARVEST AND SILVICULTURAL OPERATIONS WITH THE GROUND RULES** and 3.0 **MAINTENANCE OF PRODUCTIVITY**.

2.2 THE GROUND RULES

2.2.1 KNOWLEDGE AND FAMILIARITY WITH THE GROUND RULES AND THE AGREEMENT

Based on discussions with the Company, both in the office and field, it was apparent to the review committee that Company staff were familiar with the provisions of the ground rules and the agreement.

2.2.2 CONFORMITY OF HARVEST AND SILVICULTURAL OPERATIONS WITH THE GROUND RULES

Through examination of silvicultural records, field inspections, and discussions with the designated Crown representative (DCR), the review committee has confirmed that harvesting and silvicultural operations were conducted in accordance with the ground rules.

Silvicultural operations on the **MAGPIE FOREST** have been conducted under some of the most difficult operating conditions found in Ontario.

The limiting factor for regeneration treatment has been the lack of site preparation, due primarily to productive but difficult boulder-strewn sites and a lack of silvicultural access to winter cut areas. Using conventional equipment and methods in the five years under review, the Company has been able to meet 69% of its site preparation target. However, this represented an area equal to only 25% of the area harvested.

On the **MAGPIE FOREST**, 83% of the site preparation work carried out in the past five years was done mechanically. This work has been well done in spite of the difficult terrain, but the Company recognizes that their operating conditions severely limit any significant increases in mechanical site preparation.

From observations on field trips and discussions with Company and Ministry staff, it was apparent to the review team that prescribed burns (PBs) are an effective method of site preparation on the most difficult sites. However, during the 5 years under review, only 297 hectares were burned, 25% of the area planned. With the new small size of harvest cut blocks, wildlife and stream reserves, and the limitations on the number and size of burns that can be implemented by MNR, the use of prescribed fire as a site preparation tool is severely restricted.

Chemical site preparation has been used sparingly in the forest during this period, accounting for less than 10% of the total site preparation work.

Regeneration treatment on the **MAGPIE FOREST** during the period under review was almost exclusively tree planting. The committee was impressed by the quality of this work and the growth achieved by jack pine, the principal species. However, the committee was concerned that regeneration treatment or enhancement was conducted on an area equal to only 28% of the area harvested during the same period. This leaves a very large area of untreated cutover which will augment the existing backlog of NSR lands and reduce the productive forest land base in subsequent allowable depletion calculations.

Tending treatments in the forest, principally spray release, have been carried out annually on NSR lands and plantations. During the field trips, the committee observed very successful results of this work.

In discussions with all parties throughout the review, it has become apparent to the review team that a revised and expanded silvicultural program is essential to create a healthy forest and ensure the long-term success of this Forest Management Agreement. Conventional methods of mechanical site preparation followed by planting are applicable only to a small portion of the area that requires treatment each year. Aerial release of natural regeneration and the enhancement of stocking through spot-planting are recognized as ways to increase the conifer stocking of otherwise untreatable ground. In addition, poplar sites can be chosen and managed for aspen without costly regeneration and tending treatments. Through these and other innovations the productivity of the forest can be maintained or improved.

RECOMMENDATION: That the new Company develop a plan of action acceptable to the Ministry to provide silvicultural access to winter cut areas harvested during the review period (1984-1989) and to all future winter cut areas.

RECOMMENDATION: That the new Company develop a plan of action acceptable to the Ministry of Natural Resources to augment the forest renewal program on the **MAGPIE FOREST**.

One option may include the aerial application of herbicide to release existing natural regeneration, and provide chemical site preparation to adjacent microsites followed by spot-planting.

The ground rules permit the classification of non-treatable sites by mutual agreement. The Company has not declared any area non-treatable in the first five-year period of the agreement, although 72% of the cutover area received no treatment. The committee was concerned with this large untreated area.

RECOMMENDATION: That the new Company and the Ministry jointly review the status of lands cut over during this five-year term, for which Table 1 of the ground rules specifies treatment but which have received no treatment or plans for treatment, and that the new Company report any areas mutually agreed to be non-treatable in future annual reports.

2.2.3 CONFORMITY OF INVOICING PRACTICES WITH THE GROUND RULES

The invoicing procedures of the Company were found to be in general conformity with those specified in the ground rules. The procedure used involved the Company advising the Ministry of completed silvicultural and road construction and maintenance projects by submission of a map. These maps were then ground checked, any discrepancies resolved, and verbal approval was given to the Company. Project detail and a formal invoice were then submitted to the Ministry for payment.

2.2.4 PREPARATION OF NEW GROUND RULES

The Forest Management Agreement requires both parties to commence the preparation of new ground rules for the next five-year term at least eight months prior to the expiry of the old ground rules, and to agree upon those new ground rules on or before that expiry date of March 31, 1989. At the time of this review, the new ground rules were prepared and agreed to by Company and Ministry staff. A draft copy was provided to the review team and formal approval by the Ministry is expected shortly.

2.3 HARVEST LEVELS, ALLOWABLE DEPLETION, YIELDS AND WOOD FLOW

According to paragraph 20(1) of the agreement, the Company has agreed to maintain its harvest on the **MAGPIE FOREST** at a level between 90% and 110% of the calculated allowable depletion (allowable cut) for each working group in each five-year term. The Company may request the Minister to authorize variations to the levels specified in the agreement.

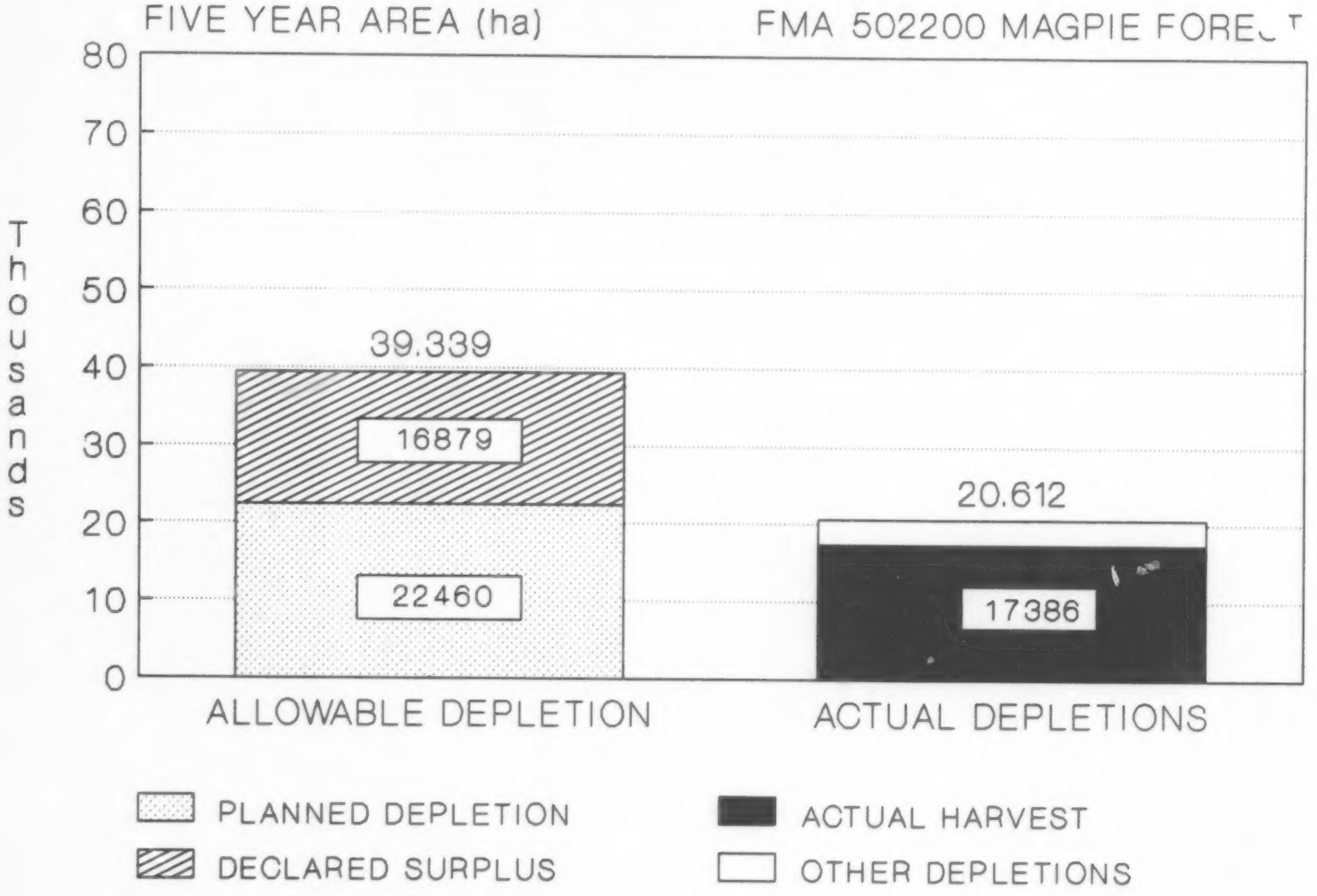
Paragraphs 20(3) and 20(4) of the agreement provide for either a remedy or liquidated damages in the event of an overcut or undercut, respectively, on the area under agreement. The agreement holder may avoid liquidated damages through the declaration of timber surplus (paragraph 20(5)) to its needs in an approved management plan; however, liquidated damages do not apply in the first five-year term of a Forest Management Agreement.

The depletion of all working groups which includes harvest, reserves, and by-pass areas was 92% of the allocation (Figure 2). The conifer working groups were fully depleted but only 77% of the allocated hardwood working group was depleted.

While the committee recognizes the extremely difficult task of meeting the 90% allocation target for each working group due to variations of stand yield, markets, mill production, and reserves and bypass, the Company should monitor these variables closely. Should the planned harvest levels change, the following is recommended.

RECOMMENDATION: That in the event the new Company should forecast depletion levels during the second five-year period to fall below the 90% level of those stated in the current TMP, the new Company should take immediate action to request, with reasonable explanation, an undercut variation from the Minister and to amend the TMP with a further surplus declaration.

FIGURE 2: COMPARISON OF ALLOWABLE DEPLETION AND HARVEST



Wood flow from the **MAGPIE FOREST** increased substantially during the last five months of the five-year term as the Company started up a new chipping plant to process poplar for use by a nearby pulp mill. Future benefits will be increased utilization of the poplar working group, which in turn will free up more conifer volume from these stands for the sawmill in Dubreuilville. Another benefit is the improved utilization of poplar tree lengths to produce veneer bolts and chips.

Stand yield during the five-year period was 9% below forecast. Yields for conifer are forecast to be lower again in the next five years. This is due to a slightly lower yield expected for the conifer working group and the low conifer yield from the area of the poplar working group harvested for the chip mill.

This recent ability to utilize large volumes of poplar, for which no yield data was available, has required the new Company to conduct operational timber cruises in order to predict hardwood yields and to up-date conifer yields expected from hardwood stands.

The objective of harvesting overmature stands was achieved; 92% of all stands harvested exceeded the rotation age. The majority of the stands harvested below rotation age were the result of road location rights-of-way to extend primary roads into areas with a high concentration of overmature stands.

2.4 NSR OBLIGATIONS

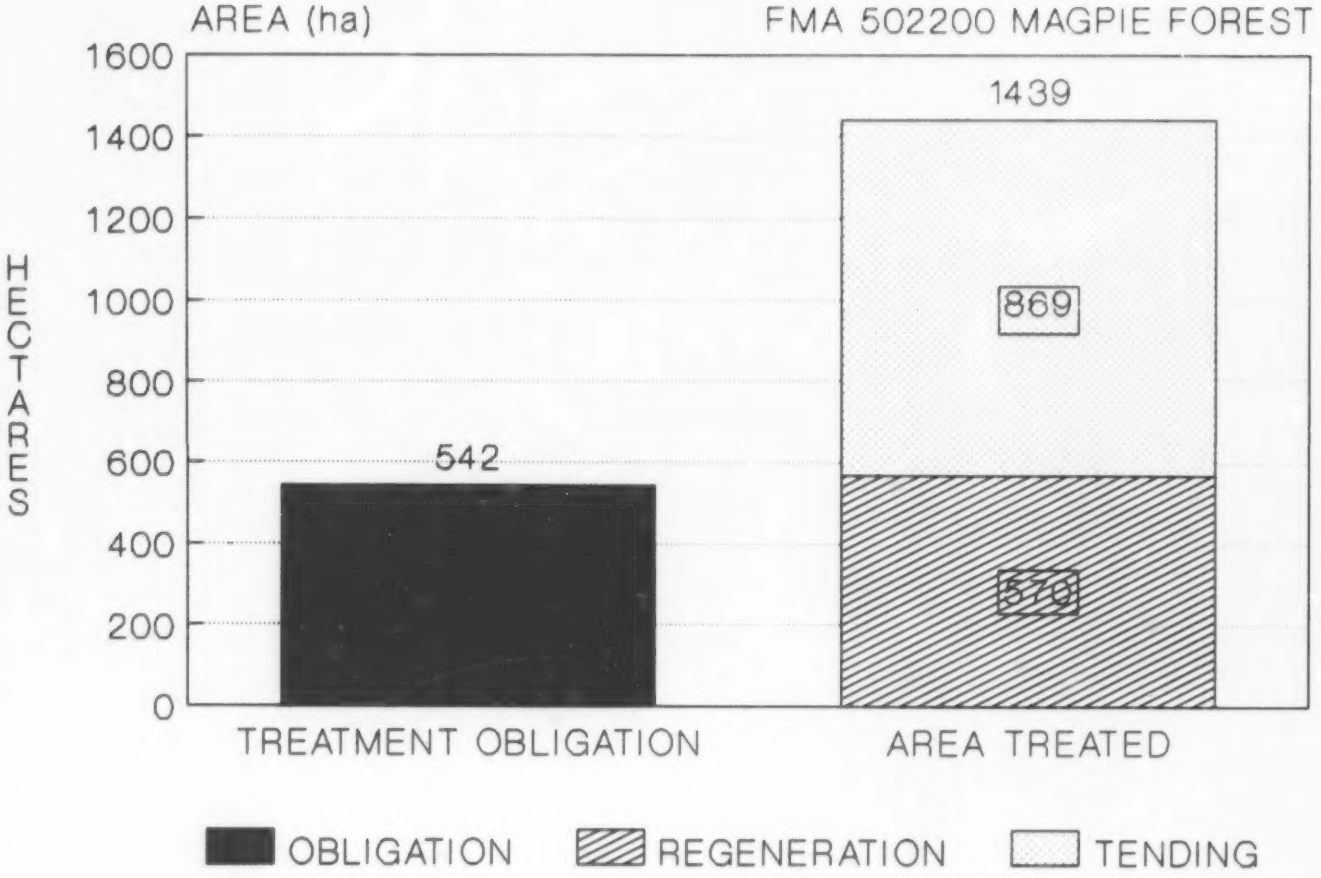
Under provisions of the agreement, the Company has an obligation to reforest NSR lands at the rate of 5% of class 2 and 3 NSR lands annually. This amounts to a total of 542 ha for the five-year term under review, and 2,168 ha for the entire twenty-year period of the agreement. The Company treated 1,439 ha of NSR land for regeneration during the five-year period, thus exceeding their five-year commitment. Figure 3 shows the comparison of the NSR obligation and area treated. The committee commends the Company for its initiative in the renewal of NSR 2 and 3 lands.

However, the committee noted that 3,574 ha of NSR 4 land (renewable at 50-100% greater than normal cost) and 15,195 ha of NSR 5 (untreatable under present technology) were listed in the original NSR survey in the ground rules of the agreement. During the field trips, some of these areas were observed to contain sufficient stocking to be reclassified as NSR 2 (satisfactorily regenerated but in need of tending). The Company is not obligated to treat these NSR 4 and 5 lands, but realizes the importance of returning them to the productive forest land base. The committee was concerned with the large areas of NSR 4 and 5, but are pleased with the new Company's plan to survey and experimentally release some of these areas.

2.5 ROAD CONSTRUCTION AND MAINTENANCE

Paragraph 31 of the agreement provides for the Minister to pay, subject to a maximum amount per kilometre, for the construction or reconstruction of forest access roads on the agreement area. To be eligible for payment, roads must be included in approved annual plans and constructed according to the standards specified in Schedule "E" of the agreement.

FIGURE 3: COMPARISON OF NSR TREATMENT OBLIGATIONS AND NSR TREATMENT 1984-89



On the **MAGPIE FOREST** during the period under review, most primary roads were built by contractors and secondary roads were built by the Company. Roads eligible for FMA funding were inspected jointly by a representative from the Company and the Ministry; lengths were measured, and standards were verified. In no case during the period under review was an eligible road found to be substandard. Following the joint field inspection, an invoice was submitted by the Company for payment, and road locations were checked by the Ministry against those in the approved operating and annual plans.

Roads invoiced for maintenance were graded at least twice each year during the snow-free period, and plowed when necessary in winter.

During the first five years of the agreement, the Company conducted an aggressive road program; 114.1 km of primary roads (77.8% of planned) and 158.0 km of secondary roads (96.9% of planned) were constructed or reconstructed on the **MAGPIE FOREST**. Access was provided to about one-third more of the area than before the FMA, primarily in the north-western, north-central, and eastern extremities of the forest. In addition, two airstrips totalling 1.6 km were built to facilitate forest protection and the application of herbicides in the Company's silviculture program.

The placement of roads allowed harvest allocations to be dispersed over the agreement area in relatively small cutting blocks, consistent with the general principles of habitat management for wildlife. Road placement also addressed the concerns of other forest users to a large extent in that all-weather roads avoided remote fly-in lakes where too much access was deemed a problem. In spite of these achievements, the committee is concerned with the high proportion of annual cutovers accessed only by winter roads leaving that portion of the cut area inaccessible for site preparation and regeneration treatment.

The shortfall in road construction shown in Figure 1 largely reflects the Company's inability to construct Road #10 as far as planned in the south-eastern portion of the forest. A reduction in road funding, together with late construction starts and poor weather conditions were highlighted as the main reasons.

A major objective of FMA road funding, to provide access to the oldest stands first, was achieved; 92% of all stands harvested exceeded the rotation age.

2.6 COMPANY RECORDS

The Company was found to have complete and up-to-date records of their road program, harvest cut and silvicultural operations, with the exceptions of NSR Classifications. NSR records, while accurately describing work performed, were found to be confusing when compared to the original NSR classes, and figures had to be verbally resolved with MNR and Company staff.

After aerial photography, roads and areas cut by the Company are marked on mylar Forest Resource Inventory (FRI) township maps. In addition, roads and more detail on cuts (clearcut, partial or selective cut) are shown on FRI blueprint maps. In contrast to the Company's efficient handling of silviculture records (see below), depletion records are still maintained primarily on maps and in accompanying ledgers. The ledgers were found to be accurate but not up-to-date. The new Company may wish to computerize the depletion database in order to stay current.

The review committee was impressed with the Company's detailed records of silvicultural work on the **MAGPIE FOREST**. These records will enable the Company to use past results on specific sites for more effective management.

Silvicultural treatments are marked on mylar planimetric maps with unique project code numbers which indicate the year and type of treatment (e.g., site preparation, planting, tending, or modified harvest to facilitate natural regeneration). Specific details of an individual treatment are entered by code number into a computerized record-keeping system developed by the Company, and are cross-referenced to other treatments carried out on the same area. Records of planting projects include information on the species composition of the previous stand, species and type of stock planted, its quality and age at planting, the seed source, number of trees planted, and name of the contractor; corresponding site preparation and tending records are equally detailed. Computer print-outs of these records, along with maps of the treated area, are kept in binders.

In each plantation on the **MAGPIE FOREST**, the Company has established survival plots to monitor stock quality and planting success. The Company is commended for their initiative.

At the Company's request, records of the Ministry's pre-FMA silvicultural work conducted on the agreement area are retained at the Ministry office and made available to the Company.

2.7 ANNUAL REPORTS

Paragraph 38 of the agreement requires that the holder prepare an annual report in accordance with the Forest Management Manual summarizing certain aspects of operations during the preceding year.

Each year, the annual report of Company operations on the **MAGPIE FOREST** was submitted as separate silviculture and depletion reports. No written report was made. While it was not a condition of the FMA, the committee suggests that future annual reports include explanations for major deviations from the plans as supporting documentation for the five-year summaries.

Although the Company and the DCR agree that they cannot recall any report being late, formal documentation to substantiate submission and approval dates was incomplete in the records of both parties. The committee encourages the Company and the Ministry to take steps to ensure the documentation of these dates so that performance of the agreement holder can be evaluated.

Apart from the recording of submission dates, the Company has done a good job in reporting. The accuracy of reporting was checked by calculating the area of 5 tree planting and 6 site preparation projects shown on invoice maps prepared after aerial photography of the sites, then comparing those to the invoiced area and the area recorded in the annual reports. Areas reported by the Company matched exactly in the invoices and reports. The difference in area of all projects combined as determined by the Company and the review committee was only 0.2%.

2.8 INTEGRATION WITH OTHER FOREST USES

Section 9 of the ground rules, entitled Modified Management Areas, outlines responsibilities for managing areas for uses other than or in addition to wood fibre production.

The potential for conflicts between forestry and other uses on the **MAGPIE FOREST** is high because of the large number of remote cottages and lodges, hunting and fishing camps, recreational lakes, mining claims, traplines, and other fish and wildlife considerations. However, the Ministry and the Company worked to resolve these potential conflicts during the preparation of plans and their amendments through public notices, information sessions, and letters inviting input. In the plan, 118 MMAs were identified by the Ministry and accompanied by management prescriptions designed to protect fisheries and wildlife habitats, fragile sites, and to preserve the aesthetic value and remoteness of specific areas. Management prescriptions followed by the Company included the establishment of no-cut reserves ranging from 30 m to 120 m in width, partial or selection cuts where some residual timber was left standing, modified cuts in strips, chevrons, or patches, skyline reserves on hilltops, angled cuts to reduce their visibility from lakes, seasonal cutting restrictions, and the closure or removal of roads to limit access to remote areas. During the period under review, the Company did a commendable job of delineating MMAs in the field. The review committee learned of only one case where a reserve was penetrated; the penetration was accidental.

Clearcut size is an important wildlife consideration. Using a dot grid, the committee calculated the size of 74 areas cut during 1984-1989 as shown on FRI blueprint maps. Approximately 59% of the cuts were 130 hectares or smaller in size, consistent with the habitat management guidelines for moose. This represented about 35% of the cutover area. A few recent cuts were very large, covering more than 400 hectares each, and one encompassed approximately 650 hectares. However, most (83%) of the cuts larger than 130 hectares were partial cuts where only conifers were removed and residual hardwoods remained with some value for wildlife. The potential negative impact of some other large cuts was reduced by leave blocks, irregular shapes, and natural topographic variation. In general, the size of the cutover on the **MAGPIE FOREST** met the standards of the five-year period.

On the **MAGPIE FOREST**, some of the Company's silvicultural treatments indirectly benefit wildlife. For example, in stands with residual hardwoods on rocky terrain, site preparation typically consists of spraying with herbicides. This results in an abundance of standing hardwood snags that will benefit snag-dependent wildlife both in the recent cuts and as the new stands mature.

During the period under review, details of stream crossings were proposed by the Company and checked by the Ministry when the Company applied for specific work permits. Field inspections showed that crossings were generally handled well by the Company. However, the committee noted a few cases where culverts were set too high on one end, and more or larger culverts might have been more appropriate. The new Company is encouraged to continue to apply existing guidelines for water crossings and to periodically inspect the crossings to ensure that they are adequate.

The new Company is commended for its continued regard for other forest uses and users on the **MAGPIE FOREST**. During preparation of the new TMP, the prescriptions outlined in seven different habitat management guideline documents were applied and 764 AOCs were identified, including three heronries and six osprey or bald eagle nests. Cuts proposed for the 1989-1994 operating period are relatively small and well-dispersed throughout the agreement area, consistent with general principles of habitat management for wildlife.

3. MAINTENANCE OF PRODUCTIVITY

Table 2 shows the maximum allowable depletion (MAD) which was calculated for the **MAGPIE FOREST** at the beginning of the five-year term under review. It indicates that the level of harvest and other forest depletions was 52% of the MAD under sustained yield management for all working groups combined. The conifer working groups were fully depleted, with the large surplus occurring in the hardwood working groups.

An area equal to only 28% of the area harvested during the five-year term received a regeneration treatment. This low regeneration figure is the result of lack of access for silvicultural treatment and exceptional boulder-strewn terrain which is extremely difficult to site prepare mechanically. Prescribed burns have been the site preparation treatment of choice, but requirements for small cutovers, stream concerns, and suitable weather for burning, make this form of site preparation expensive, impractical, and very unreliable. Chemical release of natural regeneration combined with spot-planting is presently being actively investigated as an alternate solution to increase the area of regeneration.

The committee is concerned with the current large backlog of 31,289 hectares of untreated area (NSR 4 & 5 - 18,769 ha; cutover 1984-89 - 12,520 ha). However, the Company is currently conducting a fifth year assessment of regeneration stocking on untreated areas harvested during the term of the agreement. Similarly, the Ministry is conducting a resurvey of existing NSR land. These surveys will determine the magnitude of the untreated backlog problem. There is no doubt that regeneration activities will have to be expanded and more resources committed if the **MAGPIE FOREST** is to remain a viable, productive forest management area.

To further address long-term productivity, the Company has entered into a co-operative tree improvement project (jack pine seed orchard) with the Ministry and other companies in the area.

4. COMPANY CONCERNS

The new Company was provided an opportunity to express any concerns regarding FMA 502200 or the Ministry's administration of the agreement. The following are the concerns expressed by senior management of Dubreuil Forest Products Limited:

- FMA road funding has been decreasing, and annual approval is too late in the year to allow proper selection of contractors and to ensure the work is done during the prime summer months.

- FMA silvicultural funding has become a problem where silviculture planning in the five-year and annual plans is not synchronized with the allocation of funds. This causes priorities to be changed after the work has commenced, resulting in inefficient operations and under-achievement of the regeneration objective.

- The new Company is concerned about their productive land base and are presently surveying the 1984-89 harvest cut areas to determine the amount of non-treatable area. The Ministry is resurveying NSR lands classified prior to 1984 to update the classification. Results from these two surveys will be used to update the productive land base for the next planning cycle.

- The planting cap is a concern as it prevents the new Company from meeting their TMP silvicultural targets and diminishes their silvicultural program.

- The inability of the Ministry to carry out PBs is of concern to the new Company since mechanical site preparation is not feasible on the more difficult sites.

- The inflexibility of the application of moose and water course guidelines prevents the application of the most appropriate forestry practices.

- The rapid turnover of Ministry district staff adds greatly to the difficulty of administering the FMA.

5. CONCLUSIONS AND RECOMMENDATIONS

The review committee was satisfied that the obligations of the Company under the agreement have been satisfactorily performed during the five-year term under review. However, they are concerned by the relatively large areas of NSR lands and untreated or non-treatable cutover lands accumulating on the **MAGPIE FOREST**. Returning these lands to productivity will require more resources and imaginative development work in the next five years.

The committee was impressed by the Company's silvicultural records and the high quality of site preparation and regeneration work carried out under very difficult operating conditions. The committee further commends the Company for its consideration of other forest users and the protection given MMAs.

The new Company have expressed their commitment to the success of regenerating the **MAGPIE FOREST**.

RECOMMENDATION 1: That the Minister extend the remaining period of FMA 502200 by a further term of five consecutive years to March 31, 2009, pending formal approval of the new ground rules.

RECOMMENDATION 2: That the new Company develop a plan of action acceptable to the Ministry to provide silvicultural access to winter cut areas harvested during the review period (1984-1989) and to all future winter cut areas.

RECOMMENDATION 3: That the new Company develop a plan of action acceptable to the Ministry of Natural Resources to augment the forest renewal program on the **MAGPIE FOREST**.

RECOMMENDATION 4: That the new Company and the Ministry jointly review the status of lands cutover during this five-year term, for which Table 1 of the ground rules specifies treatment but which have received no treatment or plans for treatment, and that the new Company report any areas mutually agreed to be non-treatable in future annual reports.

RECOMMENDATION 5: That in the event the new Company should forecast depletion levels during the second five-year period to fall below the 90% level of those stated in the current TMP, the new Company should take immediate action to request, with reasonable explanation, an undercut variation from the Minister and to amend the TMP with a further surplus declaration.

FIVE-YEAR REVIEW
CANADIAN PACIFIC FOREST PRODUCTS LIMITED
(FORMERLY GREAT LAKES FOREST PRODUCTS LIMITED)

TROUT LAKE FOREST
AGREEMENT 502300
1984 - 1989

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1. INTRODUCTION

1.1 PURPOSE OF THE REVIEW

The Minister of Natural Resources and Great Lakes Forest Products Limited (now known as Canadian Pacific Forest Products Limited) signed a Forest Management Agreement (FMA) for the **TROUT LAKE FOREST**, located north east of Ear Falls, on September 24, 1984. The purpose of this agreement was to provide for a continuous supply of forest products for the Company's mill at Dryden and to ensure that the **TROUT LAKE FOREST** is harvested and regenerated to produce successive crops of timber on a sustained yield basis.

This review of the first five consecutive years of the agreement was conducted on the **TROUT LAKE FOREST** to determine whether the obligations of the Company under the agreement have been satisfactorily performed and to recommend to the Minister of Natural Resources whether the remaining period of the agreement should be extended for a further term of five years.

1.2 THE REVIEW COMMITTEE

The review was carried out by a committee of three engaged by the Ministry of Natural Resources for this purpose. The three committee members were:

- Mr. G.W. Bell, R.P.F.,
  Vice-President, Woodlands (Retired),
  Spruce Falls Power and Paper Company Limited,
  Committee Chairman

- Mr. C.J. Heeney, B.Sc.F., Dip. R.M.,
  Supervisor, Forest Production and Control (Retired),
  Ministry of Natural Resources

- Dr. K.J. Szuba, B.Sc.F., Ph.D.,
  Consulting Biologist

1.3 TASKS OF THE REVIEW COMMITTEE

The review committee's assignment was to undertake a fair and objective review of Canadian Pacific Forest Products Limited performance on the **TROUT LAKE FOREST** during its first five-year term vis-a-vis its obligations under Forest Management Agreement 502300 and to make recommendations to the Minister of Natural Resources on the extension of the agreement's term according to the "Evergreen" section of the agreement (i.e., Section 15, paragraph 33).

The review was conducted by:

- examining the management, operating and annual plans and the annual reports prepared by the Company with regard to their submission dates and their acceptability to the Ministry,
- inspecting the depletion, silvicultural and access road records for adequacy and for conformity with the management plans and the ground rules of the agreement,
- comparing the levels of harvest and treatment of not satisfactorily regenerated (NSR) lands outlined in the annual reports with the levels required by provisions of the agreement,
- selecting and field inspecting harvest cuts, silvicultural projects, and road construction typical of the techniques employed in the forest for conformity with the agreement holder's records and for field application of the ground rules,
- determining the degree to which other forest users and other forest values were accommodated in management planning and in field operations, and
- meeting with Company and Ministry district staff to identify problem areas and agreement concerns on the part of either party.

2. PROCEDURES AND FINDINGS

2.1 MANAGEMENT PLANNING

2.1.1 THE PREPARATION OF PLANS

Paragraphs 6(1), 10(1), 11(1), and 15(1) of the agreement require the Company to prepare management and operating plans and a series of annual plans. These plans must be prepared and submitted to the Ministry of Natural Resources according to the time frames specified in the agreement and according to the manual that has been approved by the Minister for this purpose.

The Forest Management Agreement for the **TROUT LAKE FOREST** was signed on September 24, 1984 and the management plan was due 12 months later.

Preparation of the twenty-year management plan was delayed due to negotiations between the Company and the Ministry to use the new Timber Management Planning process for the original plan. This request was ultimately denied and the Company prepared and submitted the plan on January 21, 1987.

The operating plan for the 1984 to 1989 period was due on March 24, 1985. The Company was unable to prepare the complete plan in this time period and made a preliminary submission of maps and the listing of allocated stands in June 1985 for review by the Ministry. At the same time, due to the sensitivity of the area under agreement, the company was requested to implement some of the new Timber Management Planning requirements for public participation. These procedures were new at that time and helped to delay the final submission of the operating plan until December 1985. Ministry approval was received on June 17, 1986.

For the first year of the agreement 1984-85, the Company operated on the **TROUT LAKE FOREST** under the annual plan which was prepared and approved for Crown Timber Licence 327100 prior to the signing of the agreement. Three subsequent annual plans were submitted one month late, but the last (1988-89) was submitted on time.

The Company has prepared a new Timber Management Plan (TMP) for the second five-year term (1989-1994) in accordance with the Timber Management Planning Manual for Crown Lands in Ontario. This plan was due and received on October 1, 1988. The revised plan was submitted on February 23, 1989 and approved on March 1, 1989.

The prescribed public review process was carried out from October 1988 through March 1989 with public inspection of the approved documents in March 1989.

In conclusion, although the Company had some difficulty in meeting due dates for initial plans, they have met all their recent management planning obligations.

2.1.2 PLAN IMPLEMENTATION

The agreement requires that the Company conduct its operations in accordance with the approved management, operating and annual plans. The accomplishments of the Company in silvicultural operations and road construction are shown in Table 1.

The review committee has examined the Company planning documents and performance records supplemented by ground inspections for harvest cut, road construction and silvicultural operations. The comparison of actual and planned levels is portrayed in Figure 1.

The harvest cut and road construction records of the Company generally conform to the area allocated for harvest and the road locations specified in the documents. However, the committee noted two deviations from approved road locations, one of which had resulted in a trespass charge to the Company. In a supplement to the operating plan, the Ministry identified numerous no-cut reserves to protect Areas of Concern (AOCs) on the **TROUT LAKE FOREST**. The committee learned of only one case where a reserve was penetrated; the penetration was accidental.

There was one major amendment to the operating plan to extend three roads in the Joyce Lake area and numerous minor amendments largely related to AOCs and road locations.

Levels of achievement for both harvest area and road construction were below those planned. The reasons will be addressed in Sections 2.3 and 2.5 of this report.

Silvicultural operations shown in Figure 1 met or exceeded the planned amounts during the first five-year period of this agreement. More detail on the accomplishments of the Company will be found

TABLE 1

Summary of the Company's harvest cut and forest operations at Ministry expense for 1984-89.

FMA EXPENDITURE AND
ACCOMPLISHMENT REPORT
FOR THE FIVE-YEAR TERM 1984-1989

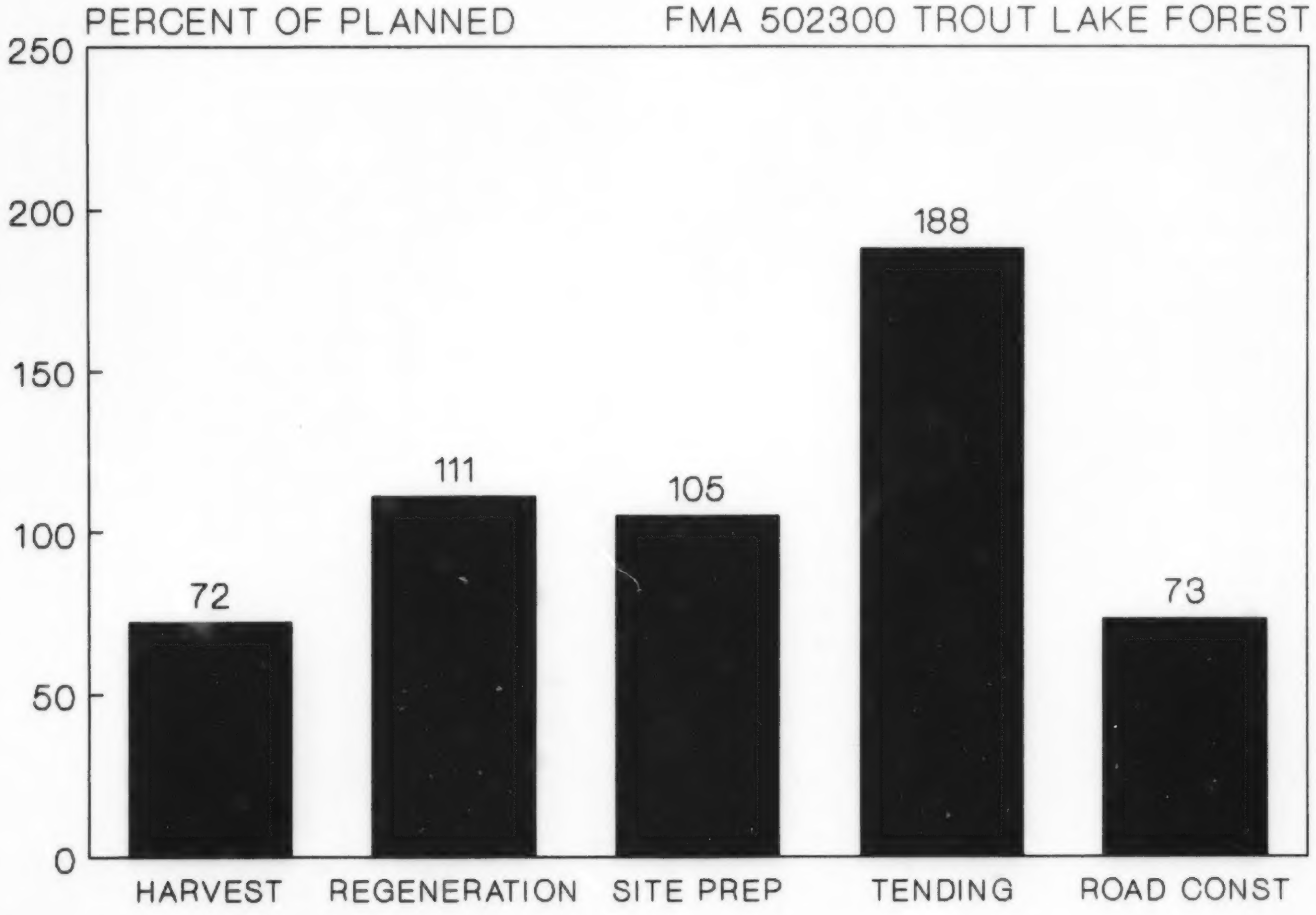
FMA 502300
TROUT LAKE FOREST
CANADIAN PACIFIC FOREST PRODUCTS LTD.

ACTIVITY	HECTARES	DOLLARS
HARVEST CUT	17,916	
NATURAL REGENERATION	1,284	
ARTIFICIAL REGENERATION		
BAREROOT	1,360	
PLANTING CONTAINER	4,513	
SEEDING DIRECT	5,851	
SCARIFICATION	1,582	
TOTAL ARTIFICIAL	13,306	
TOTAL REGENERATION	14,590	
TENDING		
CHEMICAL CLEANING AERIAL	787	
CHEMICAL CLEANING GROUND	2	
MANUAL CLEANING	5	
TOTAL TENDING	794	
SITE PREPARATION		
CHEMICAL	80	
MECHANICAL	13,246	
TOTAL SITE PREPARATION	13,326	
MNR SILVICULTURAL PAYMENTS		$ 5,253,791
ROAD CONSTRUCTION	**KILOMETRES**	**DOLLARS**
PRIMARY	88.2	--
SECONDARY	72.1	
TOTAL CONSTRUCTION	160.3	$ 4,717,540
ROAD MAINTENANCE	340.1	$ 160,810
MNR TOTAL ROAD PAYMENTS		$ 4,878,350
TOTAL PAYMENTS		$10,097,091

Note: This table represents activities carried out by the Company, and the associated costs to MNR. As part of the MNR obligation under the Agreement, Forest Management Activities were also conducted by MNR, at additional expense.

Data Source: Audit Sections 4.1.1 to 4.4.2 supplied by MNR.

FIGURE 1: COMPARISON OF OPERATING PLAN vs ACTUAL



in Section 2.2.2, **CONFORMITY OF HARVEST AND SILVICULTURAL OPERATIONS WITH THE GROUND RULES.**

2.2 THE GROUND RULES

2.2.1 KNOWLEDGE AND FAMILIARITY WITH THE GROUND RULES AND THE AGREEMENT

Based on discussions with the Company, both in the office and field, it was apparent to the review committee that Company staff were knowledgeable and familiar with all provisions of the ground rules and the agreement.

2.2.2 CONFORMITY OF HARVEST AND SILVICULTURAL OPERATIONS WITH THE GROUND RULES

The committee's examination of silvicultural records, its field inspections and its discussions with the designated Crown representative (DCR) all confirmed that harvesting and silvicultural operations were conducted in accordance with the ground rules.

The Company has done an excellent job in forest organization, delineating AOCs and conducting silvicultural operations in relation to topography, recreational pursuits, and future harvest considerations. These activities are concentrated almost exclusively in the overmature jack pine and spruce working groups.

Jack pine regeneration is obtained through site preparation and aerial seeding or planting. The results are good and competition on most sites is minimal.

During the five-year period under review, 14,461 hectares were site prepared, an area equal to 82% of the area harvested, and 16,244 hectares were treated for forest renewal, an area equal to 92% of that harvested.

During field visits, discussion with Company and Ministry foresters indicated that site preparation and seeding results could be improved on some sites by increasing mineral soil exposure (MSE). The Company hopes to achieve this by using more efficient site preparation equipment, such as the powered disc-trencher, on selected sites in place of barrels and chains. The Company is encouraged to increase the use of this more versatile equipment.

The review committee was impressed with the silvicultural practices of the Company and the prompt action taken in regenerating the harvested area. However, the Company is in the process of changing from a tree length cut and skid system to a full tree system. This change may adversely affect regeneration in the jack pine working group as much of the seed source is removed from the site. While the Company is presently monitoring the effects of full tree harvesting on jack pine stands, the following is recommended:

RECOMMENDATION: That the Company, when using the full tree logging method to harvest jack pine stands, take steps to ensure the tree cones are distributed across the cutover area for the purpose of natural seeding.

On the **TROUT LAKE FOREST**, black spruce regeneration is obtained through site preparation and planting, and through natural seeding with or without site preparation, depending on the site. Successful natural regeneration of spruce depends on accurate micro-site identification and the Company is pursuing this in order to improve their prescriptions for natural regeneration.

On lowland sites with a suitable seed bed, the full tree logging method now used by the Company reduces or eliminates the need for mechanical site preparation.

The new ground rules for the period 1989-1994 provide a lower cost regeneration treatment option which will further increase the Company's flexibility. The Company has done an excellent job in varying its planting stock requirements to meet planting needs.

The ground rules permit the classification of non-treatable sites by mutual agreement. While the Company is to be commended for the high proportion of cutover areas treated and the success of those treatments, they have not declared any area non-treatable in the first five-year period of the agreement. Although non-treatable areas are presently a very small proportion of the cutover area on the **TROUT LAKE FOREST**, the committee is concerned that with changing operating conditions and better knowledge of earlier treatment results, recognition and reporting of non-treatable sites will contribute to a more accurate forest inventory and harvest calculation.

RECOMMENDATION: That the Company recognize and report any non-treatable areas encountered in their operations.

2.2.3 CONFORMITY OF INVOICING PRACTICES WITH THE GROUND RULES

The invoicing procedures of the Company were found to be in general conformity with those specified in the ground rules. The procedure used involved the Company advising the Ministry of completed silvicultural and road construction and maintenance projects by submission of a map and project detail. These projects were ground checked and verified by the DCR and a purchase order was issued to the Company for the approved work. A formal invoice was then submitted to the Ministry for payment.

2.2.4 PREPARATION OF NEW GROUND RULES

The Forest Management Agreement with the Company requires both parties to commence the preparation of new ground rules for the next five-year term at least eight months prior to the expiry of the old ground rules, and to agree upon those new ground rules on or before that expiry date of March 31, 1989. At the time of this review, the new ground rules were prepared and agreed to by Company and Ministry staff. A draft copy was provided to the review team and formal approval by the Ministry is expected shortly.

2.3 HARVEST LEVELS, ALLOWABLE DEPLETION, YIELDS AND WOOD FLOW

According to paragraph 20(1) of the agreement, the Company has agreed to maintain its harvest on the **TROUT LAKE FOREST** at a level between 90% and 110% of the calculated allowable depletion (allowable cut) for each working group in each five-year term. The Company may request the Minister to authorize variations to the levels specified in the agreement.

Paragraphs 20(3) and 20(4) of the agreement provide for either a remedy or liquidated damages in the event of an overcut or undercut, respectively, on the area under agreement. The agreement holder may avoid liquidated damages through the declaration of timber surplus (paragraph 20(5)) to its needs in an approved management plan; however, liquidated damages do not apply in the first five-year term of a Forest Management Agreement.

Table 2 provides information in hectares by working group, the maximum allowable depletion (MAD) from 1984-1989, the total depletion, actual harvest, total regeneration and the maximum allowable depletion for 1989-1994.

The Company met its harvest obligations in the jack pine and balsam fir working groups, but cut only 63% of the forecast harvest from the spruce working group. The hardwood working groups were mainly declared surplus as the Company did not use these species in 1984 and market demand was negligible. The harvest was 72% of forecast for all working groups combined. This shortfall in the actual harvest on the **TROUT LAKE FOREST** resulted from an increase of 23.6% in wood deliveries from other sources and a 4% mill underconsumption.

Table 2 **TROUT LAKE FOREST FMA 502300**

Comparison of the 1984-1989 Maximum Allowable Depletion (MAD), Total Depletion, Harvest and Regeneration Activities and the 1989-1994 Maximum Allowable Depletion. (Ministry phase-out operations included in regeneration total).

WORKING GROUP	1984-89 MAXIMUM ALLOWABLE DEPLETION	TOTAL DEPLETION	HARVEST CUT	REGEN. TOTAL	1989-94 MAXIMUM ALLOWABLE DEPLETION
Jack Pine	18490	6145	5795		17741
Spruce X,1,2(1)	36908	12676	110985		35787
Spruce 3	3562	488	438		2574
Balsam Fir	1715	184	166		2066
Poplar X,1,2	5725	294	208		5962
White Birch	425	2	2		464
TOTAL	66825	19789	17694	16244	64594

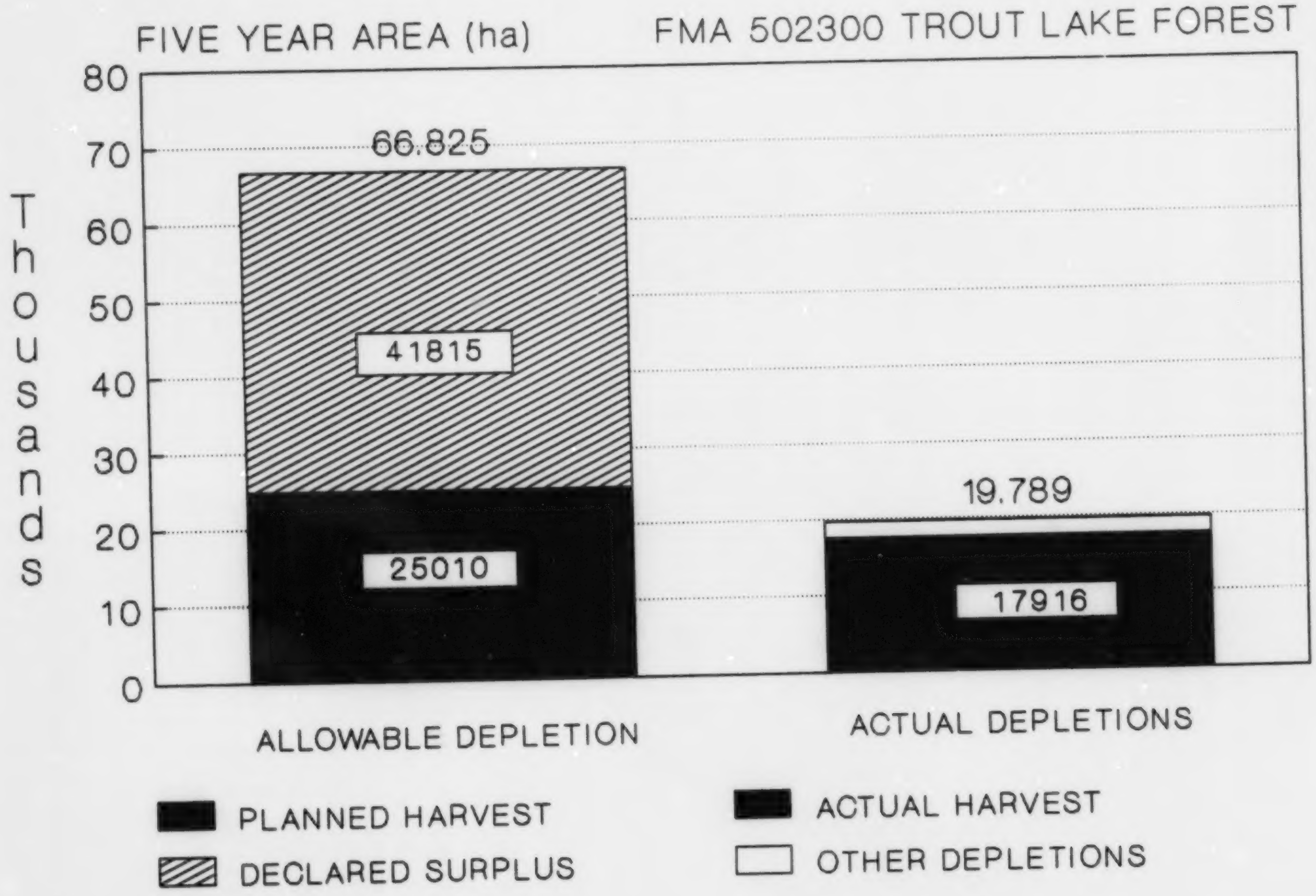
(1) X, 1, 2, 3 refer to site classes - a measure of site productivity with X being the most productive and 3 the least.

The Company failed to meet its 90% harvest requirement in the conifer working groups. Figure 2 shows a comparison between the actual harvest for the five-year term and the allowable depletion for all working groups combined. The Company has neglected to declare additional surpluses which developed during the five-year term. Since failure to do so in the next five-year term may result in liquidated damages, the following is recommended.

RECOMMENDATION: That in the event the Company should forecast harvest levels during the second five-year period to fall below the 90% harvest level stated in the plan, the Company should take immediate action to request, with reasonable explanation, an undercut variation from the Minister and to amend its management plan with a further surplus declaration.

For the five-year term, actual conifer yields per hectare were 4% lower than predicted but were within acceptable limits. Yields predicted for the 1989-94 operating period from the new TMP indicate similar yields of 119.6 m^3/ha (stacked) as the harvesting of similar types of older stands will continue. However, there is concern about an outbreak of the jack pine budworm in the northwestern part of the **TROUT LAKE FOREST** which has the potential to lower future yields.

FIGURE 2: COMPARISON OF ALLOWABLE DEPLETION AND HARVEST



The spruce budworm is currently killing much of the balsam fir in the southern part of the forest. The loss of balsam fir should not significantly affect the total yield from the **TROUT LAKE FOREST**, but the forest fire hazard from dead balsam fir will increase the potential fire loss of spruce and pine stands in the near future.

A lack of wood demand by the Dryden mill could continue to pose a problem for the **TROUT LAKE FOREST** unless an expansion occurs at this mill in the future. Currently, the majority of all working groups are surplus to the Company's needs. This surplus has recently been increased by the Company's initiative in using poplar in place of conifer in their mill process. The poplar is harvested mainly near the mill with only 17% coming from the **TROUT LAKE FOREST**. This surplus will continue to occur on the **TROUT LAKE FOREST** due to the much longer delivery distance.

The Company is highly commended for its initiative in utilizing the poplar but if maximum utilization of all species is not forecasted, the Company must justify its position for Ministry approval through the timber management planning process.

2.4 NSR OBLIGATIONS

Under provisions of the agreement, the Company has an obligation to reforest NSR lands at the rate of 5% of class 2 and 3 NSR lands annually. This amounts to a total of 319 hectares for the five-year term under review, and 1,278 hectares for the entire twenty-year period of the agreement. The Company treated 526 hectares of mainly NSR class 4 land for regeneration during the five-year period, thus exceeding their five-year committment. Figure 3 shows the comparison of the NSR obligation and area treated.

NSR class 4 land in the original agreement included cutovers which were regenerating to poplar, an unwanted species at the time of the survey. The Company has converted their mill process allowing them to utilize poplar; hence, young poplar stands are no longer considered NSR lands. As a result of this change of species use, some of these NSR class 4 lands have been reclassified into NSR class 1 under the poplar working group.

The 1988 resurvey of NSR lands, resulted in 334 ha of NSR 2 and 3 being reclassed as naturally regenerated. These 334 ha have been reclassified into the conifer and poplar working groups. These, plus the 526 ha already treated by the Company, provide a total of 860 ha regenerated to date, thus leaving 418 ha remaining to be treated in order to meet the Company obligation.

RECOMMENDATION: That the Minister recognize 334 ha of natural regeneration occuring on previously classified NSR 4 land and credit this to the Company's original NSR obligation of 1278 ha.

2.5 ROAD CONSTRUCTION AND MAINTENANCE

Paragraph 31 of the agreement provides for the Minister to pay, subject to a maximum amount per kilometre, for the construction or reconstruction of forest access roads on the agreement area. To be eligible for payment, roads must be included in approved annual plans and constructed according to the standards specified in Schedule "E" of the agreement.

On the **TROUT LAKE FOREST**, roads eligible for FMA funding were inspected jointly by a representative from the Company and two from the Ministry, including an operations technician, to verify standards and measure lengths. In no case during 1984-89 was a road eligible for funding found to be substandard. All roads invoiced for maintenance were graded at least once per year, and ground checking by the committee verified that roads were well-maintained.

Road construction fell short of what was planned (Figure 1); only 78.2% of the primary and 68.5% of the secondary roads proposed in the operating plan were built. The Company received funding for all but 4.8% of these roads. The shortfall in road construction is partly explained by the Company's decision to take advantage of surplus wood on limits closer to the Dryden mill, thereby decreasing harvest levels and the need for access roads, on the **TROUT LAKE FOREST** (see Section 2.3).

In the five-year period prior to the FMA, the Company built a total of 89.9 km of primary and secondary roads on the **TROUT LAKE FOREST**. During the first five years of the agreement, road construction nearly doubled with 89.9 km of primary and 78.5 km of secondary roads added. The average age of conifer stands harvested during that period, approximately 120 years for jack pine and 140+ for spruce working groups, indicates that the major objective of FMA road funding, to allow access to older stands first, was achieved.

2.6 COMPANY RECORDS

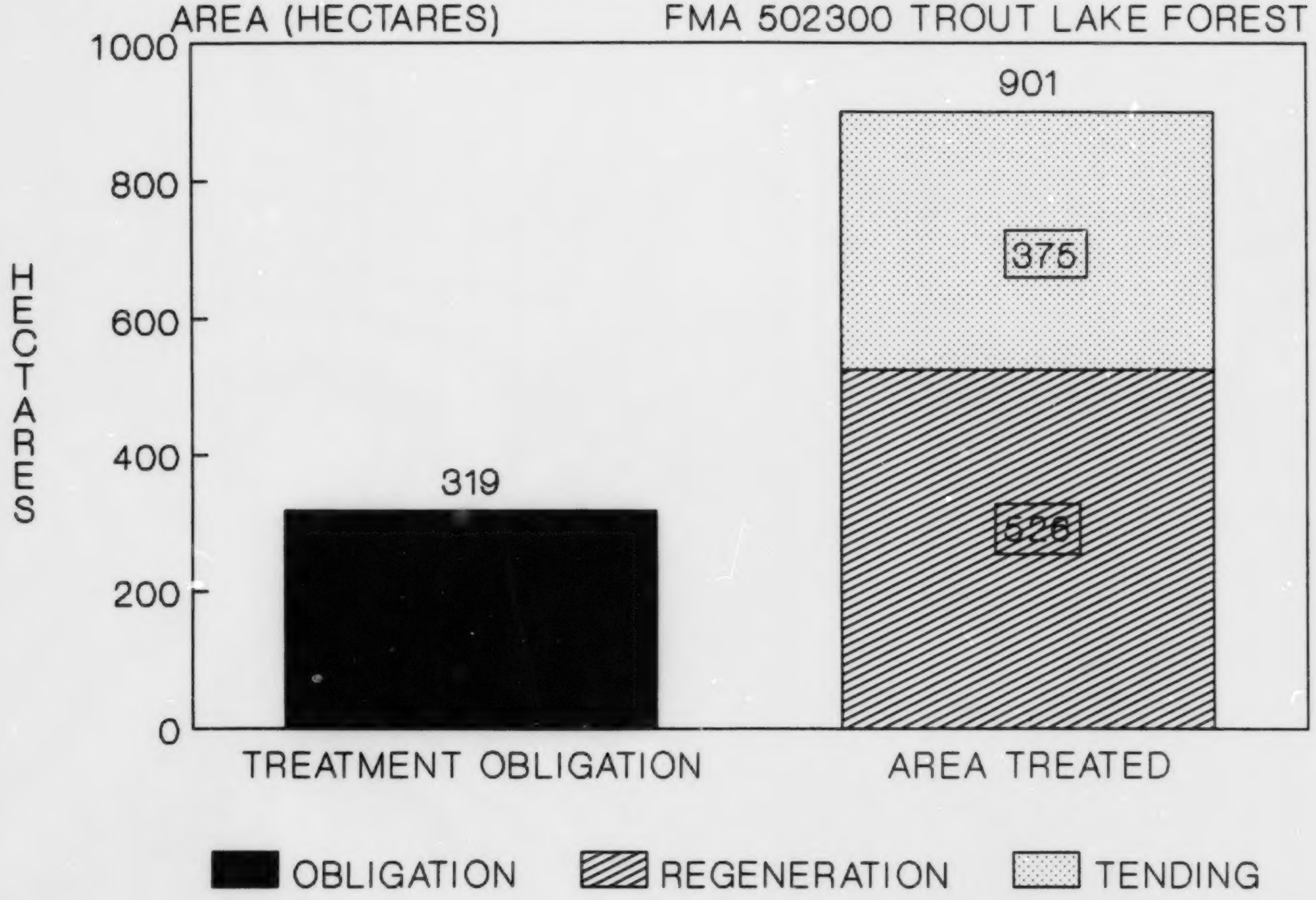
The Company was found to have complete and up-to-date records of their road program, harvest cut and silvicultural operations. Road rights-of-way and cutover areas were marked on one set of 4 inches = 1 mile mylar inventory base maps, and silvicultural activities were marked in colour on another set. The Company has a complete set of Ministry records for pre-FMA activities.

The Company has adopted the Ministry's computerized Silvicultural Information System (SIS) which will soon be fully operational, replacing the existing card system. The SIS will handle all project data including regeneration assessment.

The treatment and records of non-harvest depletions including bypass and non-treatable areas are of concern to the Company. They have requested clear definitions and guidelines from the Ministry to standardize the recording of these areas to ensure maintenance of the database and accurate updating of their forest inventory.

RECOMMENDATION: That the Ministry provide the Company with the necessary direction and, if requested, provide a training course for Company staff on database management and periodic forest inventory update.

FIGURE 3: COMPARISON OF NSR TREATMENT OBLIGATIONS AND NSR TREATMENT 1984-89



2.7 ANNUAL REPORTS

Paragraph 38 of the agreement requires that the holder prepare an annual report in accordance with the Forest Management Manual summarizing certain aspects of operations during the preceding year.

Annual reports of Company operations on the **TROUT LAKE FOREST** were submitted as a silviculture report and a separate depletion report later in the fall. This was so because aerial photography taken that summer was used to measure the area depleted the previous year more accurately. Both reports were always submitted on time. In addition to regularly scheduled reports, the Company eventually submitted revised annual reports for the first three years so they would be consistent with the new TMP reporting style. Also, the Company computerized its operations data to improve the consistency and accuracy of reporting. However, the improvements and late adjustments resulted in inconsistency in the amount of depleted area reported. For example, three annual reports were produced for the 1985-86 period, and the difference between the first (November 1986) and last (March 1989) in the harvested area of the spruce working group reported was a decrease of 8.9%. A minor difference appeared for the jack pine working group (1.8%) and none for balsam fir (0%).

The review committee is concerned with the inaccuracy of annual reporting in the earlier years. Where more than one report exists, the 1989 revision is assumed to be correct. The committee has been assured that the new computerized system will improve the accuracy of future reporting.

2.8 INTEGRATION WITH OTHER FOREST USES

Section 15 of the ground rules, entitled Modified Management Areas[1], outlines responsibilities for managing areas for uses other than or in addition to wood fibre production.

The potential for conflicts between forestry and other uses on the **TROUT LAKE FOREST** is high because of the large number of tourist resorts, outpost camps, trap lines, spawning areas, and other fish and wildlife concerns. Although not specifically required to do so at the time, the Ministry and the Company worked to resolve these potential conflicts during public reviews of the draft operating plan (see Section 2.1.1). In March 1986, the Ministry provided the Company with a supplement to the operating plan which incorporated existing habitat management guidelines for moose and fisheries. The bulk of the document contained a very detailed analysis of the Company's projected twenty-year road program. The supplement also identified other AOCs and proposed prescriptions for management. Actual prescriptions were negotiated during the preparation of annual plans, now called annual work schedules (AWS).

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[1] Modified Management Areas (MMAs) have since been replaced by the "Areas of Concern" (AOC) planning process.

A major concern on the **TROUT LAKE FOREST** is the potential for forestry operations to compromise the remoteness of canoe routes and fly-in tourism lakes. In accordance with Ministry prescriptions, the Company established no-cut zones around water bodies, considered alternate road alignments, followed seasonal cutting restrictions, and limited access by posting and the removal of roads by ditching, blockage, or scarification after the completion of forestry operations.

Fisheries concerns were accommodated by no-cut reserves around warm and cold water lakes and their tributaries, and with specific prescriptions for individual stream crossings. Field inspection showed that crossings were generally very well constructed by the Company.

Clearcut size is an important wildlife consideration. The review committee noted that although older cuts tended to be large, most made between 1984-89 were smaller. The area of 93 cuts plotted on depletion and silviculture maps by the Company was checked with a dot grid and 72% were less than 300 acres (121 ha) in size. Areas of this size are considered acceptable for managing moose habitat. The potentially negative impact of larger cuts was generally reduced by leave blocks, seed blocks, irregular shapes, and natural topographic variation.

By 1989, the Ministry and the Company located twenty bald eagle nests, two osprey nests, and four great blue heron colonies on the **TROUT LAKE FOREST**. During the period under review, such nests were protected with no-cut zones and buffer zones with seasonal cutting restrictions. As new nests were found, adjustments were made in annual plans or during operations.

As stated in the ground rules, the intent was to allow some form of harvesting and regeneration in AOCs, where possible. During 1984-89, management of AOCs around water bodies was generally limited to adjustments in the width of shoreline reserves. However, with Ministry approval, the Company performed experimental cuts on the shoreline of Rita Lake to compare the impact of different cutting patterns and intensities on the aesthetic value and water quality of the lake, and the cost and safety of forestry operations. The public was invited to view these cuts. The Company is commended for its initiative.

During preparation of the new TMP, a planning committee with representatives from the Ministry of Tourism and Recreation, the Company, and both local administrative districts of the Ministry of Natural Resources used ten existing management guideline documents and public reviews to identify and accommodate AOCs.

In conclusion, the review committee was impressed by the Company's committment to accommodate other forest users and fish and wildlife concerns in the management of the **TROUT LAKE FOREST.**

3.0 MAINTENANCE OF PRODUCTIVITY

Table 2 shows the maximum allowable depletion (MAD) which was calculated for the **TROUT LAKE FOREST** at the beginning of the five-year term under review. It indicates that the level of harvest and other forest depletions was only 30% of the MAD under sustained yield management for all working groups.

Renewal treatments were conducted on an area equal to 92% of the area harvested, with recent cut-overs receiving 96% of the treatments. A total of 1791 hectares of jack pine working group in the 6-10 year age class has been assessed as free-to-grow (FTG). This will increase substantially in the next five-year term as more treated areas become eligible for assessment.

The **TROUT LAKE FOREST** has a large surplus in the spruce working group, of which 53% is overmature. Only 28% of the MAD is being harvested. This low utilization will result in the harvesting of stands exceeding 140 years of age for many years. The jack pine working group, of which only 25% is overmature, is being harvested at a rate of 31% of MAD which should reduce the average age harvested within 20 years to a more acceptable level. This age reduction could be delayed if the mature jack pine stands presently being defoliated by the jack pine budworm require harvesting to prevent loss of yield through mortality.

A tree improvement and seed orchard program have been put in place by the Ministry with help from the Company to further address long term productivity.

4. COMPANY CONCERNS

The Company was provided an opportunity to express any concerns regarding FMA 502300 or the Ministry's administration of the agreement. The management staff of Canadian Pacific Forest Products Limited, although generally satisfied with the workings of the FMA, expressed concerns with:

- the uncertainty and very late approval of funding for both roads and the recent under funding of the 1989-90 silviculture program. On a number of occasions projects have commenced based on verbal assurance of payment.

- the continuing reduction of FMA funding for roads

- having two administrative districts directing FMA work on the **TROUT LAKE FOREST**. While the Company conducts its business through the D.C.R. from Red Lake District, on occasion the other district will request a different prescription for the same AOC.

- the inflexibility of levels of planting stock requirements specified in the five-year operating plan, even when sufficient lead time has been given the Ministry

- the areas regenerated in past years by the Ministry which have not yet received a fifth year stocking assessment or FTG survey

- changes required in the timber management plan, which was recently submitted. These changes were induced by the 1987 increase in poplar utilization by the mill. This will require reductions in harvest area, planting stock requirements, tending and road construction, with an increase in the declared surplus MAD.

- the update and maintenance of the **TROUT LAKE FOREST** land base and Forest Inventory. The Company believes a Ministry approved system of computerized data base management giving clear definition and input instructions for bypass areas, barren and scattered, NSR lands, non-treatable areas, and AOCs is required for their FMA.

5. CONCLUSIONS AND RECOMMENDATIONS

The review committee was satisfied that the obligations of the Company under the agreement have been satisfactorily performed during the five-year term under review. However, they are concerned by the large volume of wood on the **TROUT LAKE FOREST** which is surplus to the requirements of the Dryden mill. The committee was impressed with the organization and intensity of silvicultural effort by the Company and the commitment to the success of regenerating the **TROUT LAKE FOREST**. The committee further commends the Company for its consideration of other forest users and the protection given AOCs.

RECOMMENDATION NO. 1: That the Minister extend the remaining period of FMA 502300 by a further term of five consecutive years to March 31, 2009.

RECOMMENDATION NO. 2: That the Company, when using the full tree logging method to harvest jack pine stands, take steps to ensure the tree cones are distributed across the cutover area for the purpose of natural seeding.

RECOMMENDATION NO. 3: That the Company recognize and report any non-treatable areas encountered in their operations.

RECOMMENDATION NO. 4: That in the event the Company should forecast harvest levels during the second five-year term to fall below the 90% harvest level stated in the plan, the Company should take immediate action to request, with reasonable explanation, an undercut variation from the Minister and to amend its management plan with a further surplus declaration.

RECOMMENDATION NO. 5: That the Minister recognize 334 ha of natural regeneration occuring on previously classified NSR 4 land and credit this to the Company's original NSR obligation of 1278 ha.

RECOMMENDATION NO. 6: That the Ministry provide the Company with the necessary direction and, if requested, provide a training course for Company staff on data base management and periodic Forest inventory update.